Fallbrook Community Airpark

Airport Master Plan Final Report

P&D Aviation

Fallbrook Community Airpark
Airport Master Plan

FINAL REPORT

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Introduction

GENERAL

Fallbrook Community Airpark is a 290-acre publicly owned facility that serves the aviation needs of the Fallbrook and surrounding areas of northern San Diego County. The airport is owned by the County of San Diego and operated by the Department of Public Works (DPW). In order to determine the potential of the airport and specific opportunities for improving facilities, the County sponsored an airport master plan through a planning grant from the FAA Airport Improvement Program (AIP). In October 2002, a contract was awarded to P&D Aviation, a division of P&D Consultants, Inc. of Orange, California to prepare an airport master plan for Fallbrook Community Airpark.

This document comprises the Final Report for the airport master plan that documents the research, analyses and findings of the study. During the course of the study, an Interim Report was issued which documented the initial elements of the work program including inventory, forecasts and facility requirements. The Interim Report was a working document and was superseded by a Draft Final Report for the Master Plan. This Final Report supersedes all prior reports and, together with a set of airport plans, thoroughly documents the entire work program for the master plan.

PURPOSE AND SCOPE OF STUDY

The main objective of this study is to prepare a master plan to determine the extent, type and schedule of development needed to accommodate future aviation demand at the airport. The recommended development is presented in the following three planning periods: short-term (2006-2010); intermediate-term (2011-2015); and, long-term (2016-2025). The recommended development should satisfy aviation demand, community development and other transportation modes. Above all else, the plan must be technically sound, practical and economically feasible. The following objectives also served as a guide in the preparation of the study:

- To provide an effective graphic presentation of the ultimate development of the airport.
- To present the pertinent backup information and data which were essential to the development of the airport master plan.
- To describe the various concepts and alternatives which were considered in the establishment of the proposed plan.
- To provide a concise and descriptive report so that the impact and logic of its recommendations can be clearly understood by the community the airport serves and by those authorities and public agencies that are charged with the approval, promotion and funding of the improvements proposed in the master plan.
- To ensure reliability and safety of airport operations.

THE PLANNING PROCESS

A transportation planning study, such as this, is accomplished by following some fundamental, sequential steps that are briefly stated as an overview of the work to be accomplished. The initial step involves taking inventories of existing facilities and systems, documenting existing conditions, and coordinating activities with other agencies. Next, air traffic demand forecasts are prepared and then translated into a listing of required facilities. Once this list is determined it is possible to compare requirements with existing facilities to identify deficiencies. Alternative development concepts that satisfy the deficiencies are then developed and evaluated so that a recommended concept is identified. Once identified, the preferred alternative will then be detailed and examined in terms of a staged development plan. This report documents the basic steps outlined above that were accomplished in preparing the master plan for Fallbrook Community Airpark.

It is should be noted that the airport master plan focuses on the airport and the planning of facilities within its property boundary. The evaluation of off-airport areas is considered to the extent that acquisition of land is required for airport use, or that off-airport areas are impacted by airport noise or height restrictions. The airport master plan is not intended as a comprehensive general development plan for the area surrounding the airport or community. However, it can be coordinated or incorporated into other community development programs.

Chapter 2
Executive Summary

Chapter 2
Executive Summary

INTRODUCTION

The findings, conclusions, and development recommendations of the airport master plan are highlighted in this executive summary. It should be noted that the development recommendations contained in this report are based upon projected traffic levels and attainment of these levels. It cannot be overemphasized that where development is recommended based upon demand or traffic levels, it is ***actual***, not forecast, demand that dictates the timing of construction. However, for planning purposes, a schedule must be provided and this schedule is based upon the development concept requirements and the forecasts of traffic presented in Chapter 4.

It is also important to point out that the schedule of improvements proposed in this plan is contingent upon the availability of Federal, State, local funds, private investment results of cost benefit analysis, and where necessary, environmental studies. While improvements will eventually be scheduled for specific years in this airport master plan, it must be remembered that it is the programming of the Airport Improvement Program by the FAA that will determine the timing of projects eligible for FAA funding assistance. Development projects at Fallbrook Community Airpark must be reconciled with the development priorities of other airports in the County airport system and region. In terms of projects not eligible for FAA monies, the implementation will depend on the availability of local funds and private sources. Thus, the implementation of the recommendations will depend upon FAA programming and funding availability, completion of environmental studies, as well as the attainment of the projected traffic levels.

The following subsections highlight the air traffic forecasts, the sequencing of development recommendations and a summary of capital costs. Details on the various airport master plan elements can be found in subsequent chapters of this report. Chapter 3 describes the existing airport and conditions. The forecasts of aviation demand and the translation of the future demand into a list of required facilities can be found in Chapters 4 and 5, respectively. Chapter 6 presents the recommended development plan and Chapter 7 presents an environmental overview analysis that was performed as part of the master plan. Chapter 8 includes the costs of capital improvements and identifies potential funding sources. To assist the reader, a glossary and list of abbreviations used in this report has been provided as Appendix A. Appendix B contains a questionnaire that was distributed to owners of based aircraft at the airport. Appendix C presents an economic impact analysis that was prepared as part of the study and Appendix D contains an assessment of airfield conditions and design issues. Included in Appendix E are the pertinent Caltrans Airport Compatibility Guidelines.

FORECASTS OF AVIATION DEMAND

Aviation demand forecasts are projections of air traffic levels at an airport. In the case of Fallbrook Community Airpark, a general aviation airport, the forecasts focus on the number of aircraft based at the airport, and the number of operations (takeoffs and landings). A range of forecasts was prepared reflecting potential activity based on baseline, high and low growth scenarios. The forecasts included in this summary chapter represent a "High Growth" scenario. The projected "High Growth" scenario activity

levels were used for planning purposes in the interest of preparing a plan capable of accommodating a wide range of demand scenarios. As mentioned above, there is no commitment to build facilities unless actual demand warrants and therefore use of the "High Growth" forecasts will insure that the plan is flexible. It should be noted that the year 2001 was adopted as the base year for the forecast analysis.

The forecast of based aircraft is presented in Table 2-1. A based aircraft is one that is permanently stationed at an airport or lessee, usually by some form of agreement between the aircraft owner and the airport management. This forecast value is useful in developing projections of aircraft activity, as well as determining future needs of certain airport elements. In recent years a large number of hangars have been constructed which has provided facilities for additional based aircraft. Subsequently, the number of based aircraft jumped to 112 in 2005. As seen in Table 2-1, the number of based aircraft is projected to increase from present levels of 112 to 230 in the year 2025.

Table 2-1
FORECAST OF BASED AIRCRAFT

Aircraft Type	2002	2007	2012	2025
Single Engine Piston	54	132	154	226
Multi Engine Piston	0	2	3	4
Total	**54**	**134**	**157**	**230**

Source: P&D Aviation Analysis.

Aircraft operations are projected to increase from present levels of approximately 36,124 to 51,700 by the year 2025 as presented in Table 2-2. The majority of these operations will be by single engine piston aircraft, accounting for approximately 50,600 operations by 2025, or 98 percent of all operations.

Table 2-2
FORECAST OF AIRCRAFT OPERATIONS

Type Aircraft/Operation	2002	2007	2012	2025
Single Engine Piston	20,478	33,417	37,653	50,609
Multi Engine Piston	418	443	647	1,091
Total	**20,896**	**34,100**	**38,300**	**51,700**

Source: P&D Aviation Analysis.

FACILITY REQUIREMENTS

Chapter 5 presents the projection of facility requirements deemed necessary to accommodate the forecast aviation demand through the year 2025. As previously explained, the "High Growth" forecast has been assumed for planning purposes. Listed below are the findings and conclusions of the analysis.

Airside

- Airport design standards for Fallbrook Community Airpark will be applied based on an Airport Reference Code (ARC) A-I for small aircraft exclusively. These are the most practical design standards to apply considering existing facilities and conditions, aircraft operations and constraints.

- Airfield (runway) capacity is sufficient to accommodate forecast operations.

- The existing runway provides 98.95 percent coverage for a 10.5 knot (12 mph) crosswind which meets the FAA recommendation of 95 percent wind coverage.

- The present length of Runway 18-36 is 2,160 feet which is estimated to satisfy requirements for approximately 50 percent of all small airplanes (aircraft with maximum certificated takeoff weights of 12,500 pounds or less).

- The existing Visual Approach Slope Indicator for Runway 18 should be replaced with a Precision Approach Path Indicator system.

- Runway 18 qualifies for the installation of Runway End Identifier Lights (REIL) in the short-term (2007). Runway 36 qualifies for the installation of REIL in the long-term (by 2025).

- Staff at the SOCAL TRACON have recommended the development of a GPS approach procedure for Runway 36 to reduce potential airspace interactions with instrument approaches to Munn Field (Camp Pendleton). This should be pursued by the County.

An airfield assessment was performed as part of the master plan that analyzed the existing airfield geometrics, existing terrain, and identified alternatives to mitigate deviations from FAA airport design standards to the extent practical. Specific areas of concern analyzed within this assessment were:

- Runway End Safety Area Grades
- Runway Longitudinal Grade
- Runway Safety Area Transverse Grades
- Runway to Taxiway Centerline Separation
- Taxiway Width
- Taxiway Safety Area Grades
- West Taxiway Longitudinal Grade
- Parallel Taxiway Longitudinal Grade.

The assessment identified three potential projects which address several of the eight areas of concern shown above. These are: translating the runway south 240 feet to provide standard runway safety areas; constructing a partial runway overlay to address runway longitudinal grades; and constructing a diagonal taxiway on the south end which addresses or mitigates deviations with regards to Taxiway A, including runway-taxiway separation, taxiway safety area, and taxiway longitudinal grades. In addition, Taxiway A will be extended to the future end of Runway 36 at a standard separation of 150 feet. The extension of the taxiway will promote safe and efficient operations by eliminating taxiing back on the runway.

Landside

- A small general aviation terminal building, approximately 2,600 square feet should be planned to meet the long-term (2025) projected requirements.

- A total of 18 aircraft parking spaces for transient aircraft is projected for the year 2025. A total of 23 is estimated to accommodate the aircraft population permitted by the Major Use Permit.

- A total of 138 hangar spaces for based aircraft are required to meet the requirement for the year 2025. Considering the existing and presently planned number of hangar spaces (131 total spaces), there will be a need for seven additional hangar spaces by the year 2025. A total of 225 hangar spaces (or 94 hangar spaces in addition to existing and planned hangars) will be required to accommodate the maximum number of based aircraft allowed by the Major Use Permit.

- A total of 92 tie-down spaces for based aircraft are required to meet the requirement for the year 2025.

- Based on the forecast of aircraft operations the airport does not meet the requirement for Aircraft Rescue and Firefighting facilities.

- An allowance for a 5,000 square foot aircraft maintenance hangar has been assumed.

- A modest airport maintenance facility should be planned to provide space for airport maintenance equipment, storage of supplies, and shop area. A requirement of 2,500 square feet for this County function has been assumed.

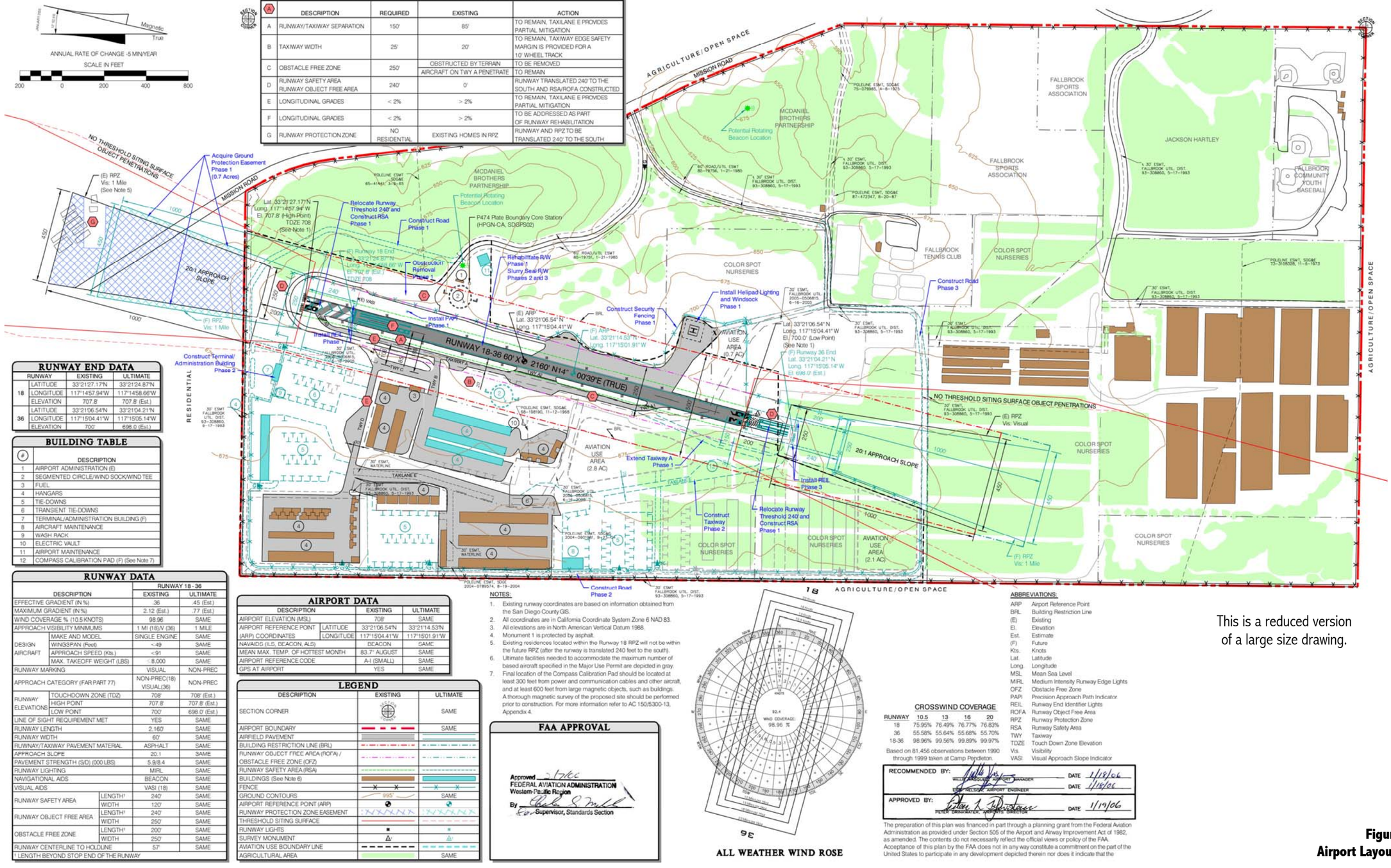
- The existing electric vault is in poor condition and provides little protection for the equipment and parts it shelters. The vault should be replaced or upgraded.

RECOMMENDED DEVELOPMENT

The Airport Layout Plan, Figure 2-1, presents the overall development plan for Fallbrook Community Airpark as recommended in this master plan. Improvements are proposed in three development phases as follows: Phase 1 (2006 – 2010), Phase 2 (2011 - 2015), and Phase 3 (2016 – 2025).

The primary focus of Phase 1 improvements is enhancement of airfield operations and correction of major deviations from FAA airport design standards. This involves obstruction removal, translation of the runway 240 feet to the south to provide standard runway safety areas (which presently do not exist), acquisition of Runway Protection Zone ground easements, and installation of airfield signage. Phase 2 development includes further airfield development to enhance aircraft/airfield operations and development of a new terminal area including a general aviation terminal/administration building and transient apron. Phase 3 development generally involves the final phases of based aircraft storage facilities, airfield improvements and support facilities. It should be noted that the plan is based on a forecast of 230 based aircraft but is capable of accommodating the maximum number of based aircraft specified in the Major Use Permit (300).

Table 2-3 summarizes all development recommendations which are more fully described in Chapter 6.



This is a reduced version of a large size drawing.

Figure 2-1
Airport Layout Plan

Table 2-3
SUMMARY OF RECOMMENDED IMPROVEMENTS

Project	Timing
Phase 1 (2006-2010)	
Construct Helipad Improvements (Lighting and Wind Sock)	2006
Obstruction Removal (Public Viewing Area)	2006
Replace Segmented Circle	2006
Design and Construct Security Fencing	2006
Construct Transient Ramp and Taxiway	2007
Reconstruct Taxiway Connector Between Taxiway A and Aircraft Hangar Management	2007
Conduct Drainage Master Plan Study	2007
Translate Runway 240 Feet South	2008
Acquire Runway Protection Zone Easements	2008
Upgrade Electrical Vault	2008
Construct 2 Inch Overlay on the East/West Taxiway and Install Taxiway Lights	2008
Install Airfield Signage	2009
Construct Road from Mission Road to L18 Airpark Storage, Inc.	2009
Relocate Rotating Beacon	2010
Slurry Seal Runway 18-36 and Taxiway A	2010
Construct 47 Based Aircraft Tie-Downs	2010
Phase 2 (2011-2015)	
Construct Diagonal Taxiway and Install Taxiway Edge Lights	2011
Slurry Seal Pavements Constructed in 2007	2011
Construct General Aviation Terminal/Airport Administration Building and Associated Improvements	2011
Slurry Seal East/West Taxiway	2012
Construct 6 Based Aircraft Tie-Downs	2013
Slurry Seal Runway 18-36, Taxiway A, and 47 Based Aircraft Tie-Downs Constructed in 2010	2014
Construct Aircraft Maintenance Hangar	2014
Slurry Seal Helipad Area, Taxiway Connector (Taxiway B), Diagonal Taxiway (Taxiway E), and Transient Ramp	2015
Phase 3 (2016-2025)	
Slurry Seal Runway, Taxiway and Apron Pavements	2016-2025
Install Runway End Identifier Lights (Runway 36)	Long-Term
Construct Based Aircraft Tie-Downs	Long-Term
Construct 7 Based Aircraft T-Hangars	Long-Term
Construct 8 Transient Tie-Downs	Long-Term
Construct Airport Maintenance Facility	Long-Term
Connect Road to Tennis Club Access Road	Long-Term
Improve Access Road to Helipad	Long-Term
Develop GPS Approach Procedure (Runway 36)	Long-Term

Source: P&D Aviation

ENVIRONMENTAL CONSIDERATIONS

Environmental analysis in this master plan involved the preparation of an environmental evaluation contained in Chapter 7 of this report. Further actions are anticipated which will require an Initial Study (IS) to be prepared pursuant to CEQA (California Public Resources Code 21000 et seq.). The IS can be prepared concurrently or jointly with the NEPA document. The NEPA and/or CEQA documentation will be prepared according to FAA and County of San Diego standards and regulations, respectively. Information contained in Chapter 7 may be used in the preparation of an Initial Study.

COSTS AND FUNDING

Implementation of the recommended development plan will require the expenditure of $21.5 million during the 20-year planning period. Approximately 81 percent of the total development costs are eligible for federal and state aid. Funds will be obtained from various sources including FAA, state, County (public investment) and private investment. Private investment will be required to construct hangars, as these projects are not eligible for funding through the FAA Airport Improvement Program. These account for approximately 19 percent of total development costs. Table 2-4 summarizes the program expenditures.

Table 2-4
SUMMARY OF CAPITAL IMPROVEMENT COSTS
(2004 Dollars)

Timing	Public Investment	Private Investment	Total Investment
Phase 1	$1,926,000	$883,000	$12,809,000
Phase 2	$1,587,000	$1,792,000	$3,379,000
Phase 3	$3,836,000	$1,456,000	$5,292,000
Total Plan	**$17,349,000**	**$4,131,000**	**$21,480,000**

Source: P&D Aviation Analysis.

Total public investment is estimated to equal $17.3 million, in year 2004 dollars, for all three phases of the planning period. When including private investment items, projects not eligible for federal or state funding assistance, the total development program will equal $21.5 million in year 2004 dollars.

Total federal, state, and local government funding for capital improvements over all three phases of the master plan is estimated, in year 2004 dollars, to be:

- Federal AIP Funding - $16.5 million
- State Funding - $413,340
- County Funding - $454,110

County funds represent the airport sponsors' matching share under the FAA AIP grant program.

Total private investment in the airport is estimated to total $4.1 million and represents projects not eligible for FAA funding. For the most part these costs include hangar development and based aircraft storage facilities assumed to be provided on leasehold areas. The private investment can be provided by private sources, or the County could elect to fund projects such as hangars with County funds.

Chapter 3
Inventory

Chapter 3
Inventory

INTRODUCTION

This chapter documents the number, type and general condition of the existing facilities that comprise Fallbrook Community Airpark (L18). It is a complete compilation of all systems, including airfield, terminal area, ground access, parking, NAVAIDS, pavement conditions, utilities and the physical characteristics of the airport site.

The purpose of performing a comprehensive inventory of existing facilities is that, in later phases of the work program, the facilities will be assessed as to their capacity to accommodate future traffic volumes. By comparing the capacity of existing facilities with future traffic volumes (demand/capacity analysis), capacity deficiencies may be determined. Once the deficiencies are identified, alternative expansion concepts (capable of accommodating future demand) can be formulated, evaluated and ultimately, a recommended development program is formulated.

The following subsections document the findings of the facility inventory work including a description of the study area.

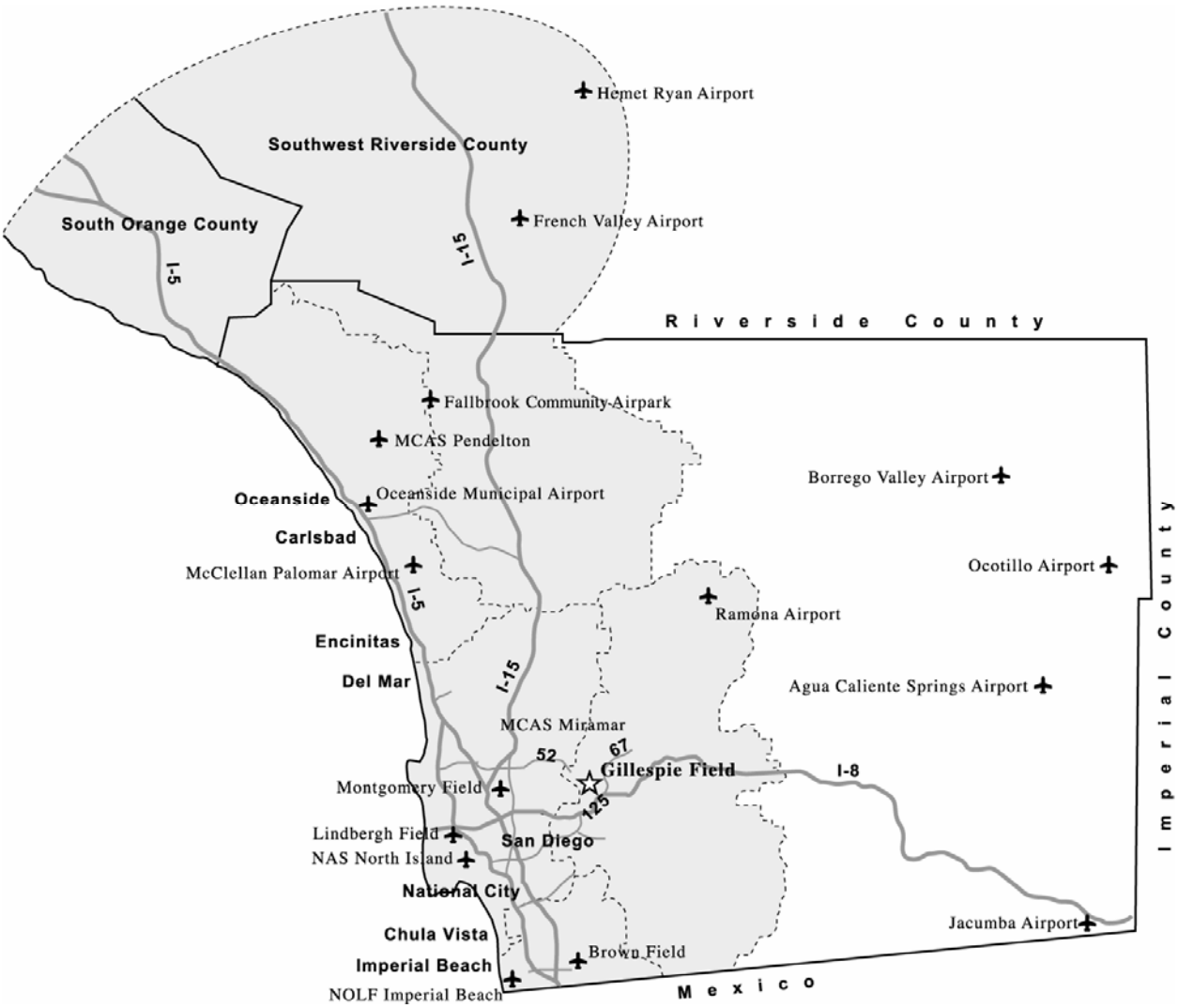
STUDY AREA CHARACTERISTICS

The study area that has been adopted for development of demand forecasts in the master plan is in San Diego, Riverside and Orange Counties. The market area for Fallbrook Community Airpark is depicted in Figure 3-1 and is defined as the western six major statistical areas for San Diego County (as designated by the San Diego Association of Governments - SANDAG), and the southwest part of Riverside County and southern part of Orange County. Figure 3-1 also presents publicly owned and military airports within the County.

The airport is located in the Community of Fallbrook in the northern portion of San Diego County. Fallbrook is bordered by unincorporated areas of the County to the north and east, Camp Pendleton to the west, and Bonsall to the south. Fallbrook lies approximately 13 miles east of the Pacific Ocean and is approximately 17 miles northeast of Oceanside (the latter measured via State Highway 76 and Mission Road). Fallbrook has approximately 1.3 percent of the total population of San Diego.[1] Historical population for Fallbrook and San Diego County is shown in Table 3-1.

Access to Fallbrook is primarily provided by Interstate 15, which is east of the city. This north-south limited access highway connects with San Diego to the south and Riverside County to the north. County Highways 13 and 15 are east-west highways that connect Interstate 15 and Fallbrook. State Route 76, an east-west highway, is approximately 6 miles south of the airport and connects Interstate 5 and 15.

[1] 2000 Census Summary File 1, Retrieved from the SANDAG website (http://cart.sandag.org/sdw/cen.asp) November 2002.



Shaded areas represent Fallbrook Community Airpark market area.

Figure 3-1
Study Area

Table 3-1
HISTORICAL POPULATION

Year	Fallbrook	County
1990	32,239	2,498,016
1991	33,016	2,539,583
1992	33,925	2,583,470
1993	34,682	2,614,222
1994	34,888	2,638,511
1995	35,140	2,658,584
1996	35,377	2,682,093
1997	35,915	2,729,054
1998	37,130	2,729,054
1999	37,952	2,853,258
2000	39,248	2,911,468

Source: San Diego Association of Governments Data Warehouse.

AIRPORT HISTORY

Fallbrook Community Airpark was planned, built and financed by individual volunteer efforts by members of the community. In April 1963 the San Diego Board of Supervisors accepted a deed for the airport land from the U.S. Navy. In October 1963 the Supervisors granted a Special Use Permit about ten months after the State of California had granted the airport permit. In September 1964 construction on the airport was started by the Fallbrook Community Airpark Board. The airfield consisted of a 2,200 foot dirt landing strip and the first operations occurred on October 28, 1964. In 1967, the first 10 metal T-hangars were constructed, and in 1968 a fixed-base operator opened a flying service with pilot instruction, aircraft rental, fuel and other services. The airport was originally operated for the county by a nonprofit citizens group called the Fallbrook Community Air Park. The County resumed management and operation of the airport in November 1997. This master plan study is the first FAA grant that has been awarded to the airport under the Airport Improvement Program.

EXISTING AIRPORT

As previously mentioned, Fallbrook Community Airpark is situated in the northern portion of the County. The airport is owned by the County of San Diego and administered and operated through its Department of Public Works (DPW). The airport is one of eight airports owned and operated by the San Diego County DPW. The other airports are McClellan-Palomar, Gillespie Field, Ramona, Borrego Valley, Ocotillo Airport, Agua Caliente Airstrip and Jacumba Airport. The other public airports within the County operated by agencies other than the County are Oceanside Municipal Airport (City of Oceanside), Brown and Montgomery Fields (City of San Diego), and Lindbergh Field (San Diego County Regional Airport Authority). MCAS Camp Pendelton, MCAS Miramar, NAS North Island, and OLF Imperial Beach are military airports located within San Diego County. One nearby public airport is located in Riverside County, French Valley Airport, which is owned by the County of Riverside. Another public airport owned by the County of Riverside, Hemet-Ryan Airport is more distant but has been considered in the Fallbrook Airpark market area.

The airport is located within the limits of the Community of Fallbrook. County Highway 13 (Mission Road) runs along the eastern side of the airport property and connects the airport to Interstate 15 to the east and State Route 76 six miles to the south. Location of the airport with respect to ground access is fair. Interstate 15 is approximately five miles to the east via Mission Road, a two lane County road. State Route 76 connects Interstate 5 (approximately nine miles to the west) and Interstate 15 (five miles to the east). The location of the airport and the local highway system is graphically presented in Figure 3-2, Vicinity Map.

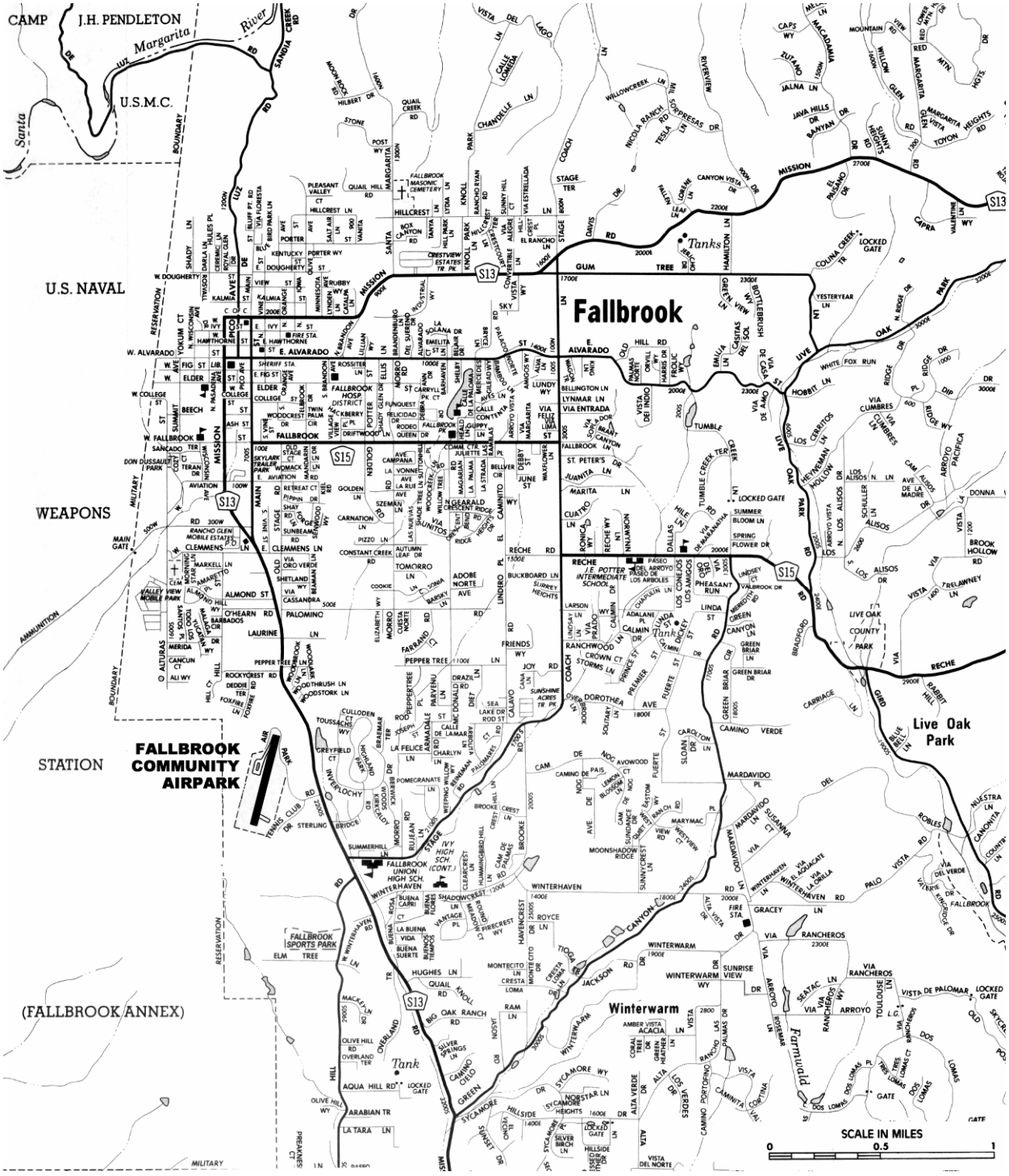


Figure 3-2
Vicinity Map

Fallbrook Community Airpark is contained in the National Plan of Integrated Airport Systems (NPIAS) and is classified as a General Aviation (GA) airport, which is an airport that serves a community that does not receive scheduled commercial air service. There are 2,558 airports in the nation with this designation and these airports account for 38 percent of the Nation's general aviation fleet.

The airport is also classified as a Community Airport in the California Aviation System Plan (CASP). This is a functional classification developed by the State to categorize airports based on an airport's function, services provided, and role in the aviation system. A Community Airport is defined as one that provides access to other regions and states; is located near small communities; serves, but are not limited to, recreation flying, training, and local emergencies; accommodates predominately single engine aircraft under 12,500 pounds; and, provides basic or limited services for pilots or aircraft.

Planning standards contained in FAA AC 150/5300-13, Airport Design, Change 9 dated 9/26/05, will be applied in this master plan study of Fallbrook Community Airpark and will use standards for Airplane Design Group (ADG) I for small airplanes exclusively. Design Group I is defined as aircraft with wingspans up to but not including 49 feet. A small airplane is defined by FAA as an airplane of 12,500 pounds or less maximum certificated takeoff weight. Application of planning and design standards for this aircraft group ensures that all aircraft that could be expected to use the airport will be accommodated by facilities of appropriate design.

AIRSIDE FACILITIES

The term "airside" as used in this report relates principally to the airfield facilities, or landing area, and includes the runway and taxiway system, the runway approach areas and the associated appurtenances such as airfield lighting, visual and navigation aids. One might argue that the aircraft parking aprons are also part of the airside operating element, however, we prefer to consider aprons as part of the "landside" because apron planning considerations are more intimately associated with passenger terminal or FBO operations which are classified in the landside element. Air traffic control facilities and meteorological considerations are also addressed in the airside facility discussion as they can significantly affect aircraft operations into and out of an airport. Existing airside and landside facilities are shown in Figure 3-3, Existing Airport.

Runway/Taxiway System

The airport consists of one runway, designated 18/36 and encompasses 290 acres. Of this area approximately 145 acres are used for non-aviation purposes (sports park, tennis club, nursery, and fruit groves as permitted in accordance with major use permit). The runway is of asphalt construction and is 2,160 feet long and 60 feet wide. The true bearing of the runway is North 14º 00' 39" East.

The present Airport Reference Point (ARP) is located at 33° 21' 06.5" North latitude and 117° 15' 04.41" West longitude. The established airport elevation, defined as the highest point along any of an airport's runways, is 707.8 feet above mean sea level (MSL), which is at the end of Runway 18. Runway coordinates and elevations are based on information obtained from the San Diego County Surveyors. The Airport Layout Plan (ALP) dated July 7, 1998, will be used as a base map for this master plan. As of January 2005, the magnetic declination was 12.88° East with an annual rate of change of -5 minutes per year.

An evaluation of airport pavements was conducted for the County under a separate contract (see Figure 3-4). Based on information contained in the study, the runway pavement strength is 5,900 pounds for single wheel landing gears and 8,400 pounds for dual wheel landing gears.[2] Taxiway and apron pavements have also been rated. The condition of the runway pavement

[2] Pavement Management Program Fallbrook Airpark. Kennedy/Jenks Consultants.

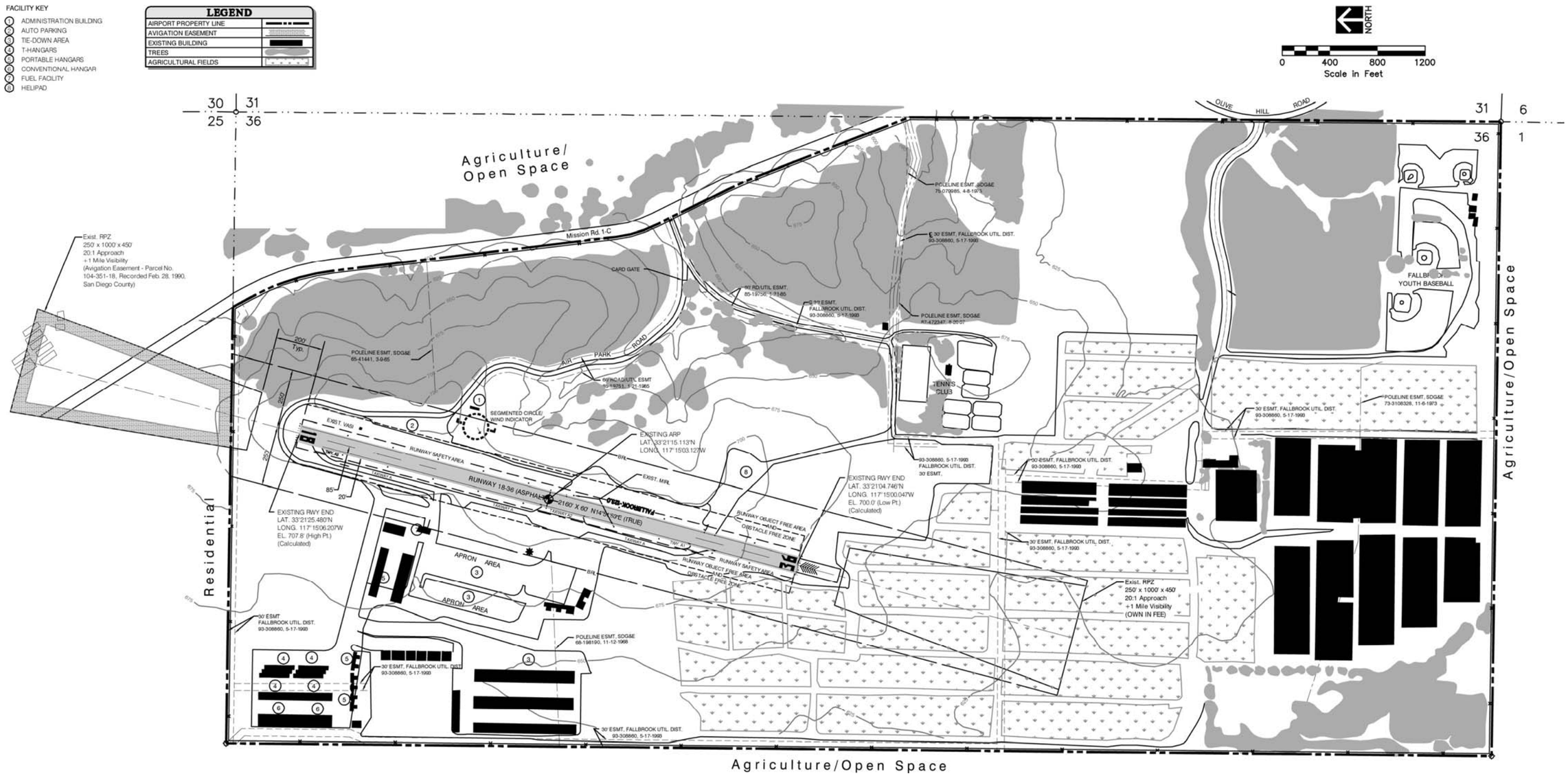
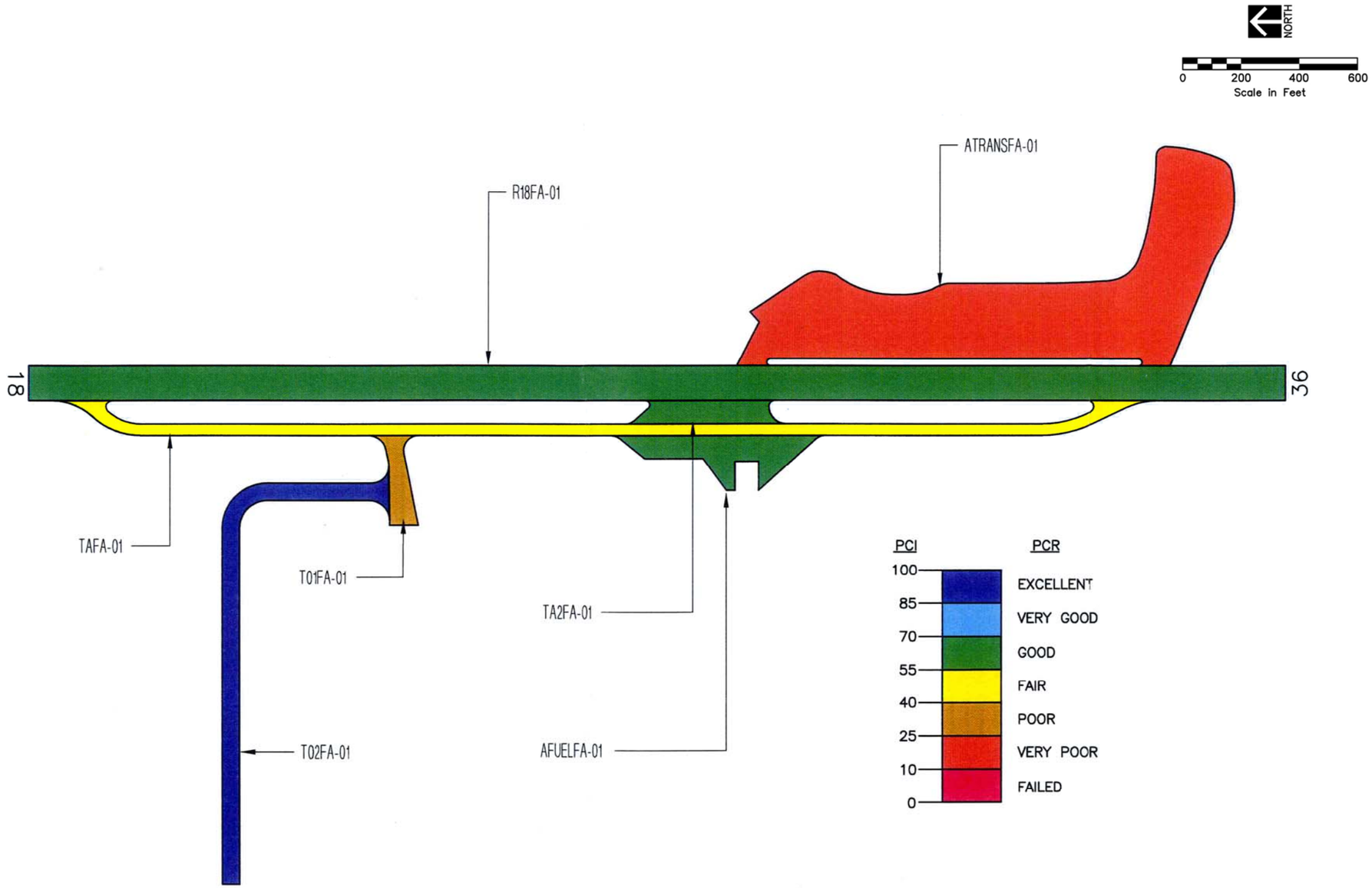


Figure 3-3
Existing Airport



Source: Pavement Management Program Fallbrook Airport, Kennedy/Jenks Consultants.

Figure 3-4
Pavement Condition

is identified as good. The condition of Taxiway A is identified as fair, the west side midfield pavement is good, stub taxiway off Taxiway A is poor, access taxiway to the FBO area is excellent, and the helicopter area is in very poor condition. For further information the interested reader should consult the Pavement Management Program report.

Pertinent data for the existing runway ends is presented below:

	Runway 18	**Runway 36**
Elevation	707.8'	700.0'
Latitude	33º 21' 27.17"	33º 21' 06.54"
Longitude	117º 14' 57.94"	117º 15' 04.41"

Source: San Diego County Survey.

The runway is equipped with medium intensity edge lights (MIRL). The runway is marked with visual markings and include centerline, designator (runway number), and side stripe markings. Runway numbers should be located 20 feet from the runway threshold. In the case of Fallbrook, the runway number markings appear to be less than 20 feet from the runway end.

A segmented circle, lighted wind tee and lighted windsock are located east of the runway, north of midfield. This marking system helps visiting pilots locate wind indicators, as well as indicating nonstandard traffic patterns that may exist. The segmented circle consists of painted tires and is in poor condition.

There is a partial parallel taxiway (Taxiway A) on the west side of the runway which serves approximately three quarters of the runway length and provides access to aircraft parking and the Fixed Base Operators (FBOs) on the airport.

Runway 18-36 is served by three taxiways on the west side (A1, A2, and A3) and no taxiways on the east side. Taxiway A1 is an angled taxiway that is located approximately 405 feet north of the end of Runway 36. Taxiway A2 is 180 feet wide and is located at approximately midfield. Taxiway A3 is an angled taxiway located approximately 85 feet south of the end of Runway 18 that serves as an entrance taxiway for the runway. The taxiways at the airport are lit with medium intensity taxiway edge lights (MITL), but are not equipped with taxiway signs.

A compass calibration pad (compass rose) is located south east of the transient ramp, east of the runway. The condition of the compass rose has deteriorated.

There is no airfield signage present at the airport.

Deviations from FAA Airport Design Standards

The runway centerline to taxiway centerline separation at Fallbrook is 85 feet. The standard is 150 feet. Taxiway A is a 20 feet wide whereas the standard taxiway width for ADG I is 25 feet.

Due to the hilly terrain on the airport there are significant grade issues. The runway obstacle free zone is the airspace above a surface centered on the runway centerline. In the case of Fallbrook the surface is 250 feet wide. The OFZ clearing standard precludes object penetrations (including terrain, taxiing and parked aircraft). The hillside near the public viewing area violates OFZ criteria. FAR Part 77, Objects Affecting Navigable Airspace, contain standards for identifying obstructions in the vicinity of an airport. The hillside also is an obstruction to the primary and transitional surfaces as defined in the regulation.

The FAA Advisory Circular 150/5300-13, Airport Design, Change 9 dated 9/26/05, defines the Runway Safety (RSA) as: a defined area centered on the runway centerline. The RSA shall be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations; drained by grading or storm sewers to prevent water accumulation; capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft. The runway does not meet standards for RSA particularly near the public viewing area and beyond runway ends. A closer assessment of safety areas and airfield geometrics was performed as part of the master plan.

The FAA defines a Runway Object Free Area (ROFA) as being centered on the runway centerline and the ROFA clearing standard requires clearing the ROFA of above ground objects protruding above the RSA edge elevation. Within the last few years the County relocated parking barriers in the public viewing such that automobile parking is outside the ROFA. However, the hillside on which the viewing area is located obstructs the ROFA (as well violating grading standards for RSA mentioned above).

A portion of the runway exceeds the maximum allowable longitudinal grades. There is a grade difference between the runway and Taxiway A (approximately six feet) that is in violation of the RSA. Taxiway A is located within the OFZ. The centerline profile for Taxiway A is very uneven and does not meet longitudinal grade standards.

Meteorological Considerations

Meteorological considerations for this master plan were based on weather observations taken at Camp Pendleton as obtained from the National Climatic Data Center. This consisted of 81,456 weather observations taken at Camp Pendleton over the period 1990 through 1999. The analysis resulted in the preparation of wind roses which are be contained on the Airport Layout Plan.

The existing runway configuration provides 98.96 percent coverage for a 10.5 knot crosswind, and 99.56 percent coverage for a 13 knot crosswind. FAA states in AC 150/5300-13 that the allowable crosswind is 10.5 knots for Airport Reference Codes A-I and B-I. The coverage meets the FAA recommendation of 95 percent crosswind coverage, thus additional runways for improved crosswind coverage are not required.

The average wind speed is 4.1 knots and calm wind conditions (less than 4 knots) prevail approximately 32.6 percent of the time. Wind speeds of 17 knots (19 mph) and greater are infrequent and occur approximately 0.7 percent of the time.

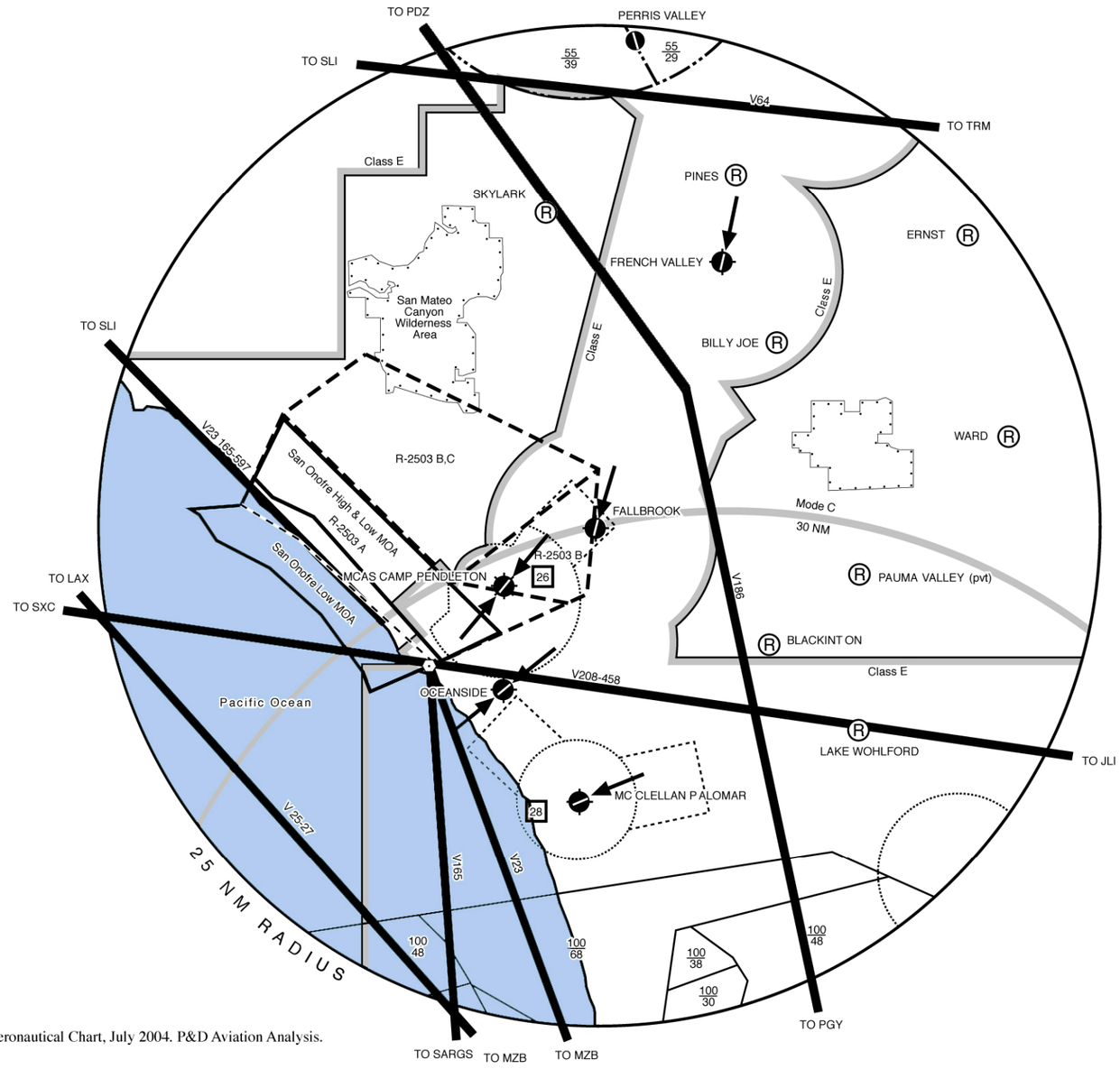
Based on the data provided by the NCDC, Instrument Flight Rules (IFR) weather conditions occur 7.1 percent of the time. These are periods when cloud ceilings are less than 1,000 feet above ground and/or visibility less than 3 miles. Periods of IFR are most likely to occur during August (9.8 percent), June (8.8 percent), July (8.4 percent) and January (8.3 percent). February, October and September are also months when IFR conditions exist more than 7 percent of the time.

The airport reference temperature, which is defined as the mean maximum temperature of the hottest month is 83.7° and occurs in August. This is based on historical data compiled by the NCDC at Vista, the nearest weather station where data was available. The average total annual precipitation is 13.7 inches. These are based on weather observations for the period 1971 through 2000.

Airspace and Navigational Aids

Airspace

The existing system of enroute airways, navigational aids, and airports located within a 25 nautical mile (nm) radius of Fallbrook Community Airpark is depicted on Figure 3-5. The low altitude airways which traverse the area serve those



Source: Los Angeles Sectional Aeronautical Chart, July 2004. P&D Aviation Analysis.

LEGEND

- Military Airport
- Public Airport
- Private Airport
- V186 — Low Altitude Airway with Identifier
- Restricted Area
- Military Operating Area (MOA)
- Class B Airspace
- Class C Airspace
- Class D Airspace
- Class E Airspace
- Class E — Class E Airspace 700 Feet AGL Floor
- 100/48 — Ceiling / Floor
- 29 — Class D Ceiling Height
- Published Instrument Approach Final Approach Course
- VORTAC
- OCN — Three Letter Identifier
- Wildlife Area Boundary

Figure 3-5
Airspace Environment and Adjacent Airports

reroute aircraft flying below 18,000 feet MSL. Including Fallbrook Community Airpark, there are fourteen airports within 25 nautical miles of the airport which are shown on Figure 3-5. Four of the airports (including Fallbrook) are publicly owned airports. These are Oceanside Municipal, McClellan-Palomar, and French Valley. Nine of the airports are privately owned, and one (Camp Pendleton – Munn Airfield) is a military facility. Table 3-2 presents the thirteen neighboring airports within the 25 nautical mile radius and includes a summary of facilities and services. Since Camp Pendleton is adjacent to the airport much of the air traffic in the area is military related. McClellan-Palomar Airport is also a heavy user of the nearby airspace and accounted for nearly 222,000 operations in 2001. This was the second greatest number of operations in the County.

Controlled airspace means an area in which some or all aircraft may be subject to air traffic control. It is a generic term that covers the different classification of airspace (Class A, Class B, etc.) and defined dimensions within which air traffic control service is provided to IFR and VFR flights in accordance with the airspace classification. The various controlled airspace areas found in the vicinity of Fallbrook Community Airpark are discussed below.

- **Class B Airspace.** Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers, and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. Class B airspace is located approximately eighteen nautical miles south of Fallbrook and is associated with Lindbergh Field. The ceilings and floors of various sections of the San Diego Class B airspace are shown on Figure 3-5.

- **Class C Airspace.** Class C airspace consists of the airspace surrounding airports that have an operational airport traffic control tower (ATCT), are serviced by radar approach control, and accommodate minimum levels of aviation activity as specified by the FAA. Like Class B airspace, Class C airspace is individually tailored for the airports they serve. These airspace areas generally consist of a surface area with an additional layer above it, resembling an upside-down wedding cake. Pilots are required to establish two-way radio communications with the ATC facility providing air traffic services prior to entering Class C airspace and must maintain those communications while in the airspace. Within Class C airspace, air traffic controllers are required to separate aircraft operating under visual flight rules (VFR) from aircraft operating under instrument flight rules (IFR), but are not required to separate VFR operations from one another. Class C airspace is located approximately 22 nautical miles north of Fallbrook and is associated with March AFB.

- **Class D Airspace**. This is generally airspace from the surface to 2,500 feet above the airport elevation surrounding those airports that have an operational control tower. The area is generally defined as all area within five statute miles (4.3 nautical miles) of the airport, however, the circular configuration can be tailored when instrument approach procedures are published for an airport. There are three Class D Airspace areas in the vicinity of the airport, located at McClellan-Palomar, Ramona, and Camp Pendleton. No separation services are provided to VFR aircraft in the Class D airspace area.

Table 3-2
AIRPORTS IN THE VICINITY OF
FALLBROOK COMMUNITY AIRPARK
(Radius of 25 nautical miles)

Airport	Distance from Fallbrook (nm)	Runways	Runway Surface	Ownership	Based Aircraft	Individual Hangars	Fuel	Maintenance	Control Tower
Fallbrook	-	18-36(2,160')	Asphalt	Public	82	41	100LL	Major	No
Camp Pendleton MCAS/Munn Field	5.4	03-21(6,006')	Asphalt	Navy	NA	NA	NA	NA	Yes
Oceanside Municipal	9.5	06-24(2,712')	Asphalt	Public	72	30	100LL	Major	No
Blackington	10.4	17-35(2,200')	Dirt	Private	[a]	[a]	[a]	[a]	No
Billy Joe	13	04-22(2,200')	Dirt	Private	[a]	[a]	[a]	[a]	No
Pauma Valley Air Park	13.4	11-29(2,700')	Asphalt	Private	[a]	[a]	[a]	[a]	No
McClellan-Palomar	13.6	06-24(4,897')	Asphalt	Public	414	197	100LL/Jet A	Major	Yes
French Valley	14.9	18-36(4,600')	Asphalt	Public	120	58	100LL/Jet A	Major	No
Lake Wohlford Resort	16.3	03-21(1,345')	Dirt	Private	[a]	[a]	[a]	None	No
Skylark Field	16.3	01-19(1,850')	Turf	Private	[a]	[a]	[a]	[a]	No
		11L-29R(2,800')	Turf						
		11R-29L(2,800')	Turf						
Pines Airpark	19.2	18-36(2,500')	Dirt	Private	[a]	[a]	[a]	[a]	No
Ward Ranch	20.8	09-27(700')	Dirt	Private	[a]	[a]	[a]	None	No
		12-30(1,580')	Dirt						
		14-32(2,250')	Dirt						
Ernst Field	23.7	02-20(3,100')	Dirt	Private	[a]	[a]	[a]	None	No
Perris Valley	24.5	15-33(5,100')	Asphalt	Private	[a]	[a]	100LL/Jet A	Major	No

Note: NA = Not applicable
Source: P&D Aviation Analysis of FAA Form 5010-1 and 1998 California Aviation System Plan
[a] Data not available

Airspace associated with Camp Pendleton Munn Airfield operations may impact IFR approaches at Fallbrook. Airspace (LIMA) has been dedicated to the military for approach control operations. This airspace includes Fallbrook Airpark. Since the instrument approaches to Camp Pendleton and Fallbrook overlap, an IFR approach to Fallbrook may be impacted by instrument approaches to Munn Airfield. However, the impacts to Fallbrook are negligible due to the low number of instrument approaches at Fallbrook. The SOCAL TRACON has requested development of a GPS approach procedure to Runway 36, but the timing of a procedure is dependent on other FAA priorities.

- **Class E Airspace.** There are two types of Class E airspace in the vicinity of Fallbrook; one type starts at the ground and the other starts 700 feet above ground. Fallbrook is located within the latter of the two types of Class E airspace. Approximately half of the airspace in the vicinity of the airport is Class E airspace which starts at 700 feet above ground. McClellan-Palomar has two Class E airspace designations associated with the airport that start at ground level. Class E airspace is controlled airspace, but is the least stringent controlled airspace classification in terms of pilot certification, aircraft equipment, entry requirements, etc. No separation services are provided to VFR aircraft in the Class E airspace area.

- **Restricted Area.** These areas designate airspace within which the flight of aircraft is subject to restriction. Restricted areas are typically associated with military operations and denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery or guided missiles.

  There are three restricted areas in the vicinity of Fallbrook Airpark that are all associated with neighboring Camp Pendleton: R-2503A, R-2503B, R-2503C. R-2503A is a restricted area that extends from the ground level up to 2,000 MSL and is in use from 6AM to midnight. R-2503B is also in use from 6AM to midnight and extends from the ground to 15,000 MSL. The remaining restricted area, R-2503C, extends from 15,000 MSL to Flight Level 270 and is in use intermittently with notice given in NOTAMs 24 hours in advance. R-2503B and R-2503C are adjacent to the west side of the airport.

  R-2503A/B support hazardous military training activities that include but are not limited to: Fixed Wing/Rotary Wing Close Air Support (CAS); Fixed Wing/Rotary Wing Simulated Close Air Support (SIMCAS); Night Vision Goggle (NVG) operations; ROA operations; Aerial paradrops (personnel and equipment); Aerial photography and visual reconnaissance training; Terrain Flight (TERF) operations and tactics training; Confined Area Landing (CAL) site training; Troop, equipment, and material movements via aircraft using both internal and external lifts; Helo heavy-external-lift training; Low altitude air defense training; Helicopter external ammunition cargo onload/offload; Electronic countermeasures training with flares and chaff; Laser marking/targeting/range-finding training; Small arms weapons training; Explosive Ordnance Disposal (EOD) operations training; Quality assurance testing of small arms munitions; Direct and indirect weapons fire; Research, test, and development projects for various DOD weapon systems; Offensive combat tactics and doctrine training; and, Shipboard ammunition onload/offload. R-2503C is used for high angle, high altitude artillery fire. The restricted areas are heavily used.

- **Military Operations Area (MOA).** These are airspace assignments of defined vertical and lateral dimensions established to separate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.

  Two MOAs are within 25 nautical miles of the airport, the San Onofre High and Low MOAs. The San Onofre Low MOA altitude of use is from 2,000 MSL up to but not including 4,000 MSL and the San Onofre High MOA altitude of use from 4,000 MSL up to but not including 8,000 MSL. Both MOAs are used intermittently with notice given via

NOTAMs. The MOAs are used to support tactical fixed wing aircraft operations. These areas are not used for supersonic operations.

Low altitude Federal Airways in the vicinity of the airport can be seen on Figure 3-5 and include the following:

- **V64** – is an east-west airway that connects the Seal Beach and Thermal VORTACs and is north of Fallbrook. V64 is defined by an 80-degree radial of the Seal Beach VORTAC and a 263-degree radial of the Thermal VORTAC.

- **V208-458** – is also an east-west airway located to the south of the airport. This airway is defined by the 83-degree radial of the Oceanside VORTAC and the 263-degree radial of the Julian VORTAC. V208-458 continues on to the west to the Santa Catalina VORTAC.

- **V25-27** – is a northwest-southeast airway, west of Fallbrook, is defined by a 123-degree radial of the Los Angeles VORTAC and a 304-degree radial of the Mission Bay VORTAC.

- **V186** – is a north-south airway located to the east of the airport.

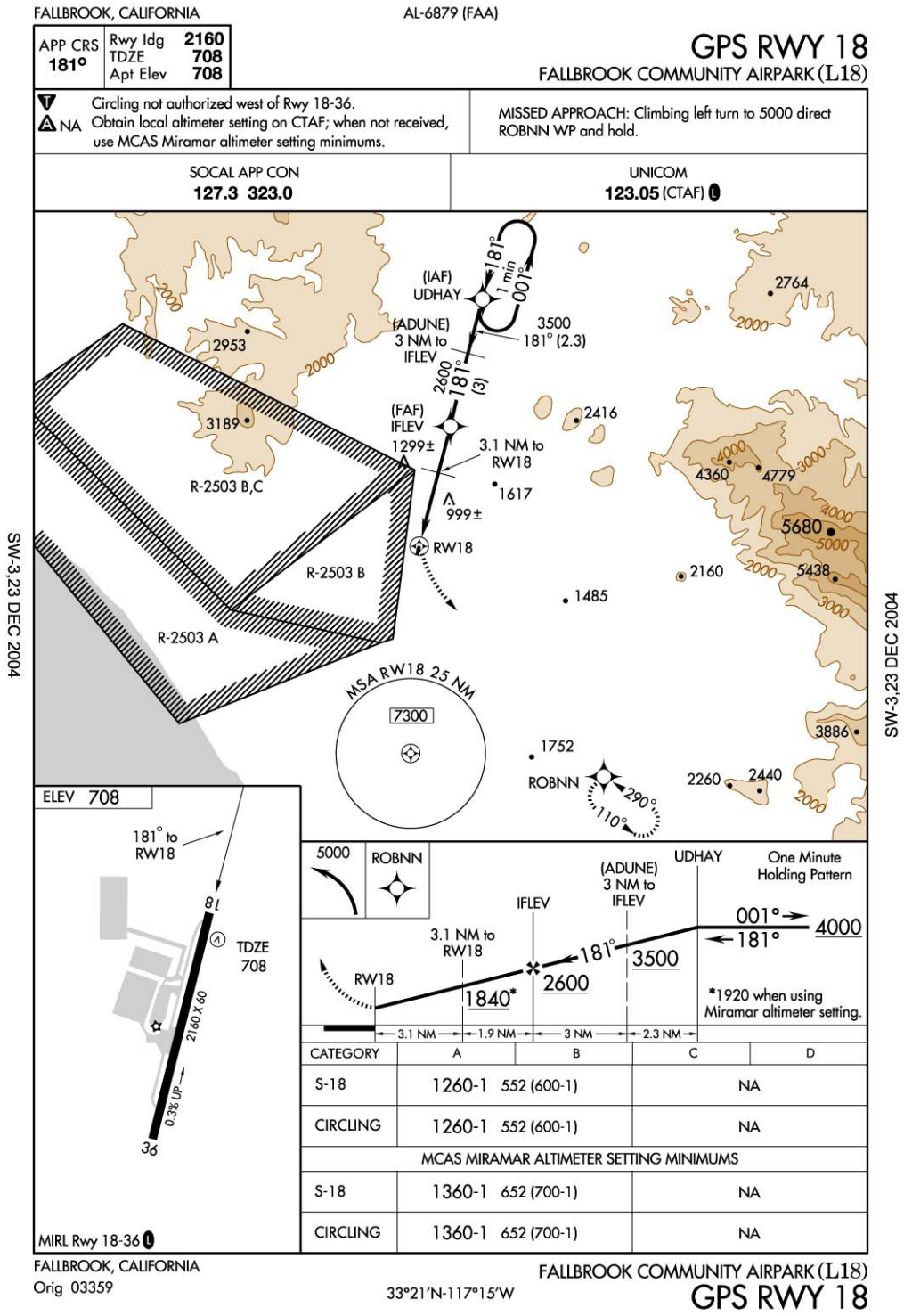
- **V23** – Connects the Oceanside VORTAC and the Mission Bay VORTAC with a 145-degree radial and a 326-degree radial, respectively. V23 continues north of the Oceanside VORTAC and connects with the Seal Beach VORTAC via V165-597. V23 is located southwest of the airport and V165-597 is to the west.

- **V165** – Also connects the Oceanside and Mission Bay VORTACs. This north-south airway, southwest of the airport, is defined as a 162-degee radial from the Oceanside VORTAC and a 255-degree radial from Mission Bay.

There is one published instrument approach procedure for the airport, which is classified as non-precision instrument approach. An instrument approach procedure is a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a point where a landing may be made visually. The procedure provides protection from obstacles that could jeopardize safety of aircraft operations by providing a specific clearance over obstacles. There are two types of procedures - precision and non-precision instrument approaches. A precision approach procedure is one in which an electronic glide slope is provided that gives the pilot glide path, or specific descent profile guidance. A non-precision approach is a procedure in which no electronic glide slope is provided. In this case the pilot is provided with directional, or azimuth, guidance only.

The non-precision instrument approach at Fallbrook is a GPS approach for Runway 18. A GPS approach is satellite based and does not require ground based navigational aids at or near the airport. This published instrument approach procedure has landing minima of 600 foot ceiling and 1 mile visibility. Plan and profile views of the GPS approach are presented in Figure 3-6.

Published instrument approaches are available at three of the public airports within 25 miles of the Airpark. These are Oceanside, McClellan-Palomar and French Valley. Oceanside has GPS approaches for Runways 6 and 24, and also a VOR/GPS-A (circling) approach procedure. McClellan-Palomar has three approaches; an ILS and RNAV/GPS approach procedures for Runway 24 and a VOR/GPS circling approach. French Valley has a GPS approach for Runway 18. There are also several instrument approach and departure procedures associated with Munn Airfield at Camp Pendleton.



Source: Federal Aviation Administration, Digital Terminal Procedures Version 0413. Effective February 16, 2006 to April 13, 2006.

Figure 3-6
Runway 18 GPS Approach

In the interest of minimizing noise, there is a published noise abatement pattern for Runway 18 at Fallbrook. This is shown in Figure 3-7.

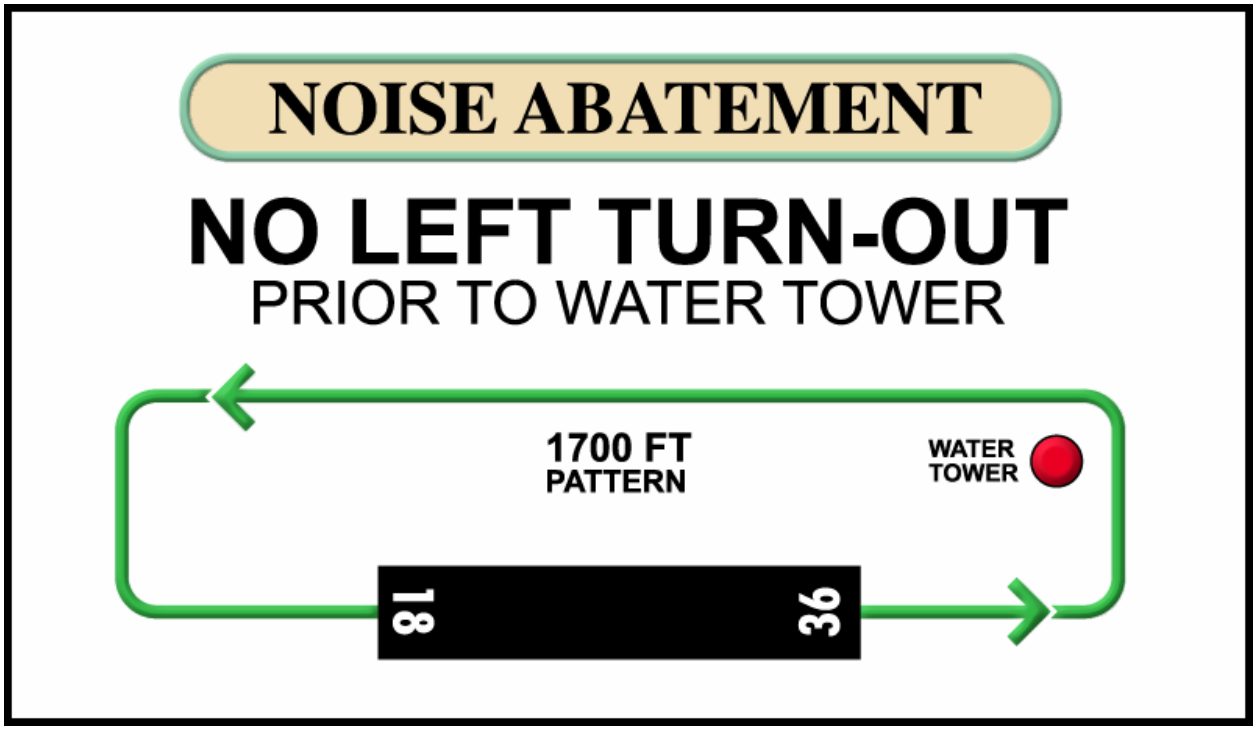


Figure 3-7
Runway 18 Noise Abatement Procedure

Navigational Aids

An automated "Super UNICOM" is available at the airport. This service provides local traffic pattern advisories but is not used for air traffic control purposes. Additionally, the Super UNICOM provides current weather information.

Assistance from the Flight Service Station (FSS) is available to pilots in the Fallbrook Community Airpark area through the San Diego FSS. This facility is located at Montgomery Field. The services which are provided by the FSS include:

- Issuance of Notices to Airmen (NOTAM's)
- Dissemination of Pilot Reports (PIREP's) to interested parties
- Issuance of weather data
- VFR advisory service
- Direction finding assistance to "lost" aircraft
- Pilot briefing service
- Flight plan assistance

In addition to the above navigational aids and advisory services, the airport is equipped with the following visual aids. These are provided to assist pilots in locating the airport at night or during periods of reduced visibility.

- **Rotating Beacon** - a visual aid that indicates the location of an airport. Alternating white and green beams indicate an airport with beacons located either on or close to an airport. The beacon at Fallbrook Community Airpark is located on top of the administration building. The beacon was moved when the previous administration building was removed.

- **Visual Approach Slope Indicator (VASI)** - provides vertical visual glide path information to approaching pilots. The equipment at Fallbrook is not certified and is not a true VASI. It consists of a one box light unit, with flashing white and red lights, approximately 123 feet from the end of Runway 18 on the left side of the runway. The glide angle is non-standard (4-degrees). When approaching aircraft are above the glide path a white flashing light is seen by the pilot. When approaching aircraft are below glide path, a red flashing light is visible, and when on glide path a steady white light will be seen.

LANDSIDE FACILITIES

The landside facilities consist of those airport elements that support the various activities of the airport except for the navigation and maneuvering of aircraft. The exception to this categorization is the aircraft parking apron, which due to its relation with passenger terminals and FBOs is considered a landside component. At Fallbrook Community Airpark the landside facilities include aircraft parking aprons, hangars, fuel facilities, auto parking, and an administration office building. The majority of the landside facilities at the airport are located west side of runway with only the administration building, compass rose, and a public viewing area on the east side. As shown in Figure 3-3 landside facilities at Fallbrook Community Airpark are accessible from Mission Road (County Highway 13) via Air Park Road. Mission Road borders part of the eastern side of the airport and is maintained by the County. Air Park Road is maintained by the Airports Department.

Administration Building

An administration building is located on the east side of the runway and is accessible from Air Park Road. The administration building is a 10 foot by 40 foot trailer with the airport beacon mounted on top. This building houses the airport management offices. A pay phone and restrooms (portable toilet) are nearby in the adjacent parking lot. There are approximately five automobile parking spaces next to the office. A public viewing area is near the administration building parking, and can accommodate approximately thirteen automobiles.

Aircraft Parking Apron

Transient parking is provided on the western side of the airport near recently constructed shade hangars. There are eleven tie-down spaces on the transient ramp. Based aircraft parking is available on two aprons on the west side of the runway. The eastern most apron area has 31 tie-downs and the western apron has twelve tie-downs, however, these are currently planned to be redeveloped with aircraft storage hangars. One tie-down is also located on an existing lease hold.

Fixed Base Operators

Fallbrook Community Airpark has four Fixed Base Operators (FBOs) located on the airport; Fallbrook Air Service, Fallbrook Flyers, Aircraft Hangar Management and L18 Airpark. Fallbrook Air Service is located on the northwestern corner of the airport and Fallbrook Flyers partially borders the southern side of Fallbrook Air Service. Fallbrook Air Service has 31 hangars (18 T-hangars and 13 box hangars) for based aircraft and three hangars for aircraft repair. There is also a 1,000 square foot building that is used for aircraft repair and houses restrooms. Fallbrook Flyers has six box hangars for aircraft storage. Two hangars are 55 feet by 40 feet and four are 42 feet by 40 feet. L18 Airpark has 38 aircraft shades, nine box hangars, and 36 personal storage units.

Aircraft Hangar Management recently constructed eighteen hangars and a 3,640 square foot maintenance hangar. Aircraft Hangar Management plans to build 23 more hangars, for a total of 41 hangars.

Fuel storage facilities include one above ground storage tank with a capacity of 12,000 gallons. The tank is owned and operated by an existing tenant (Aircraft Hangar Management) and serves Avgas. The tank was installed in 2003.

Automobile Parking

The existing auto parking facilities total approximately 94 as shown below. Additionally, aircraft owners will park their automobiles in hangar spaces or on their tie-down when they are flying their aircraft.

Location	Number of Spaces
Administration Building	5
Aircraft Hangar Management	30
Fallbrook Air Service	28
Fallbrook Flyers	12
L18 Airpark	6
Public Viewing Area	13
Total	94

Airport Support Facilities

The electrical vault is located west of the runway, approximately midfield. It is a cinderblock structure with chain-link entrance that houses electric panels and spare light fixtures. An upgraded facility should be provided to improve security, operations and maintenance.

EXISTING UTILITIES

Water (FPUD)

Water for domestic and fire-fighting purposes is provided by Fallbrook Public Utility District (FPUD) through an 8-inch line that starts in Mission Road at the northeast corner of the airport, runs along the northerly property line for 1,400 feet where it turns to the south via the FPUD 30-foot easement for 400 feet, then runs in a southeast direction for 710 feet through a 10-inch line, then it turns south and follows Taxiway A and crosses the runway 150 feet north of Runway 36 end, then travels southeast for 400 feet, then follows the helicopter road to the northwest corner of the Tennis Club, then travels easterly and connects with Mission Road. There are three 10-inch laterals which serve aircraft parking aprons and hangars (see Figure 3-8).

Reclaimed Water (FPUD)

Reclaimed water is provided via an 18-inch line within the FPUD 30-foot easement, which starts at the northwest corner of the airport property and runs parallel to the westerly property line for 3,200 feet. At that point, it turns to the east and runs for 1,150 feet, then to the south for 800 feet. Reclaimed water is used for irrigation of the agricultural fields. Most of the planting in these fields is potted and not planted directly in the ground, for commercial uses. Overflow irrigation water of these areas is captured in three ponds and reused.

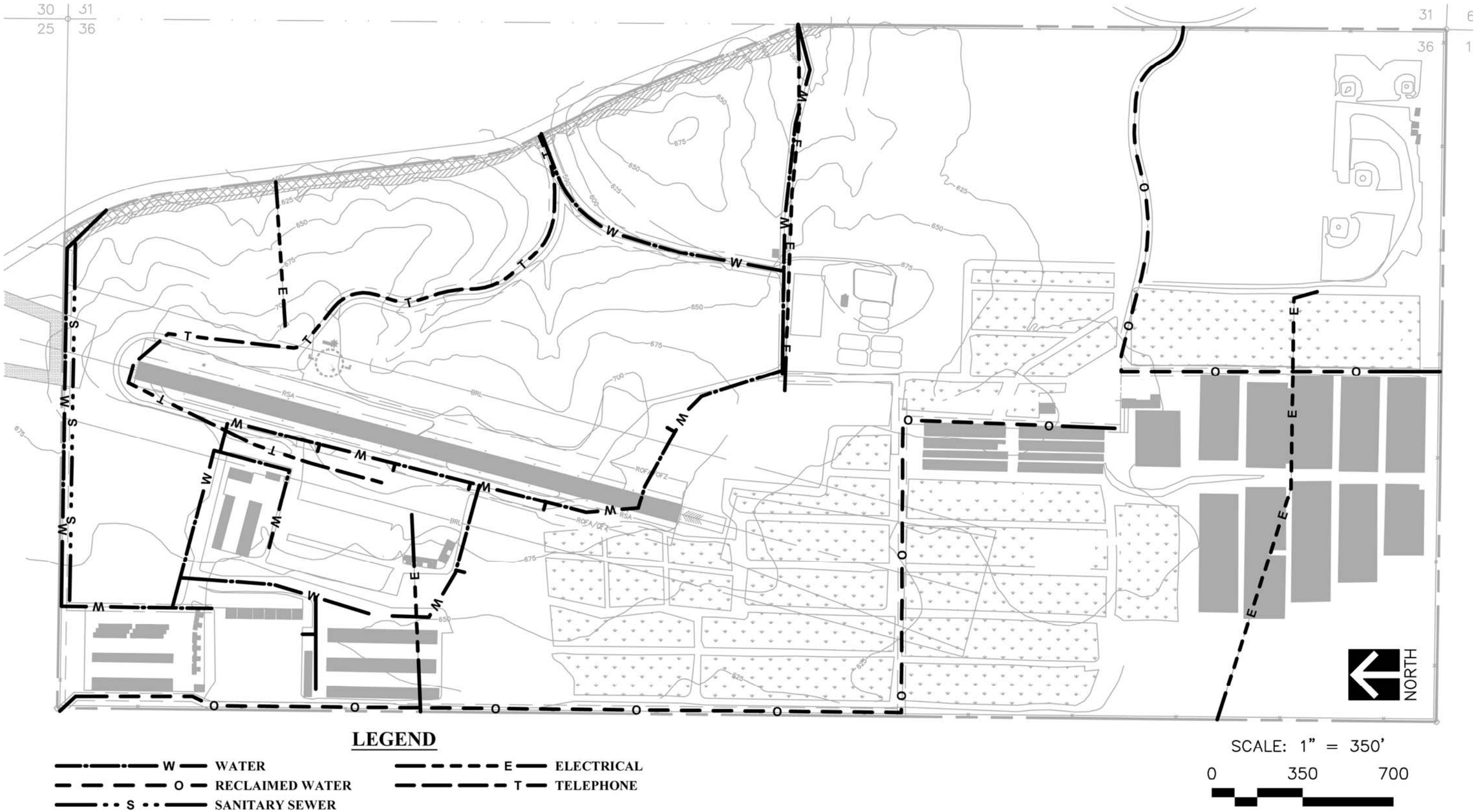


Figure 3-8
Existing Utilities

Another 16-inch reclaimed water line runs from the east side of the airport, at Olive Hill Road towards the Fallbrook Youth Baseball facility via the FPUD 30-foot easement. The 16-inch line continues to the west beyond the baseball field then turns to the south along the west perimeter of the agricultural field.

Sanitary Sewer (FPUD)

A 14-inch force main sewer pipe runs along the northerly perimeter of the airport, which only services properties north of the airport. Fallbrook Airpark uses a septic system for sewage disposal. Future development will continue to use the same type of septic system.

San Diego Gas & Electric

San Diego Gas & Electric (SDG&E) provides electricity to the airport. An electric trunk line is located along the east side of the airport, within Mission Road and another one along the west side of the airport. From these trunk lines, four pole line easements originate; the first one runs from Mission Road to the west to service the airfield lighting; the second one runs from the westerly property line to the east to service the apron and hangars. The third electric line feeds from the Mission Road trunk line and runs toward the west to service the Tennis Club. The fourth line feeds from the westerly trunk and runs towards the east to service the Fallbrook Youth Baseball field. There is no gas service at the airport.

Telephone

SBC Company provides telephone service to the airport at the terminal area through underground lines. A telephone line branches from a main trunk line at the intersection of Mission Road and Air Park Road, runs in a northwest direction along Air Park Road, turns around the northerly end of Runway 18-36 (the 18 end), crosses Taxiway "A" and runs along the west side of the runway for approximately 1,000 feet.

AIRPORT OPERATIONS

Historical Aviation Activity

This subsection summarizes the recent historical levels of aviation activities at the airport in terms of based aircraft and aircraft operations. The turnaround in the general aviation industry that began with the passage of the General Aviation Revitalization Act in 1994 encountered setbacks in 2002. The tragic events of September 11th and their aftermath did impact the demand for general aviation products and services, both negatively and, in some cases positively. The continued week U.S. economy, declining industry profits, and increased corporate accountability, may account for a large part of the declining demand for general aviation aircraft in 2002. General aviation activity at FAA air traffic facilities was, for the most part, flat in 2002, declining less than one percent.

A based aircraft is one that is permanently stationed at an airport or lessee, usually through some form of agreement between the aircraft owner and the airport management. Information indicating the history of based aircraft at Fallbrook Community Airpark was compiled from data provided by the County and the FAA Terminal Area Forecast. Table 3-3 presents a history of based aircraft for the period 1990 to 2005 and includes data for 1980 and 1985. County data is reflected except for those years in which data was not available.

Table 3-3
HISTORY OF BASED AIRCRAFT

Year	Single Engine	Multi Engine	Helicopter	Total
1980*	51	1	0	52
1985*	69	3	0	72
1990	87	0	0	87
1991	98	0	0	98
1992	98	0	0	98
1993	98	0	0	98
1994*	103	7	1	111
1995*	97	3	0	100
1996	98	0	0	98
1997	98	0	0	98
1998	98	2	0	100
1999	98	2	0	100
2000	98	2	0	100
2001*	97	3	0	100
2002	53	1	0	54
2003	56	3	0	59
2004	77	4	1	82
2005	108	3	1	112

Sources: County of San Diego. FAA Terminal Area Forecast for those years indicated by (*).

As seen in Table 3-3 the number of based aircraft at Fallbrook has approximately doubled since 1980. During the 1990s the number of based aircraft at the airport was fairly steady at approximately 100. The largest number of aircraft based at Fallbrook occurred in 2005 (112 based aircraft). In 2002, the number of based aircraft significantly decreased to 54 due to the loss of hangar space at the airport. In 2004, the number of based aircraft experienced a rebound towards pre-2002 levels as replacement hangars were constructed.

An aircraft operation, or movement, is defined as either a takeoff or landing with each operation being categorized as either local or itinerant. A local operation is one that is performed by aircraft that: 1) operate in the local traffic pattern or within sight of the airport; 2) are known to be departing for or arriving from flights in local practice areas located within a 20-mile radius of the airport; or 3) execute simulated instrument approaches or low passes at the airport. Itinerant operations are all operations other than local. Aircraft operations for the years 1980, 1985 and the period 1990-2005 are shown in Table 3-4. The data is primarily based on the FAA Terminal Area Forecast which largely consisted of estimates provided and assumed at the time (as evidenced by the constant number of operations shown for several years). The airport is equipped with a traffic counter that has been in operation since 2001. Based on traffic counter data, the number of aircraft operations in 2002 was 20,968, 18,292 in 2003, 22,728 in 2004, and 36,124 in 2005.

Table 3-4
ANNUAL AIRCRAFT OPERATIONS

Year	Itinerant	Local	Total
1980	1,025	4,000	5,025
1985	17,600	17,400	35,000
1990	10,000	25,000	35,000
1991	10,000	25,000	35,000
1992	10,000	25,000	35,000
1993	10,000	25,000	35,000
1994	7,000	1,800	8,800
1995	7,000	1,800	8,800
1996	7,000	1,800	8,800
1997	7,000	1,800	8,800
1998	7,000	1,800	8,800
1999	7,000	1,800	8,800
2000	7,000	1,800	8,800
2001	7,000	1,800	8,800
2002	NA	NA	20,968
2003	NA	NA	18,292
2004	NA	NA	22,728
2005	NA	NA	36,124

Source: FAA Terminal Area Forecast, except 2002 through 2005 which are based on traffic counter data.

BASED AIRCRAFT OWNERS SURVEY

As part of the master plan, a survey was mailed to the based aircraft owners at the airport. Fifty-eight surveys were mailed and thirty-one were returned (53 percent). A sample survey is provided in Appendix B. In the survey, respondents were asked to rate the priority of improvements at Fallbrook from lowest priority to highest priority. The improvement rated as the highest priority is adding a wash rack (70 percent). Other notable improvements are additional hangars, pavement resurfacing, and reconfiguring the taxiways; ranking 66, 62, and 60 percent respectively.

Of the 31 respondents 61 percent live in Fallbrook, 36 percent live elsewhere in the San Diego County, and the remaining three percent live in Riverside County. The reason respondents base their aircraft at Fallbrook is the proximity to their homes (90 percent). Another reason is favorable flying conditions (52 percent). Many respondents indicated they liked the availability of facilities and services (26 and 19 percent respectively); however, many indicated less satisfaction with facilities and services since the County took over airport management. Twenty-six percent also based their aircraft at the airport due to the costs of the services, and many commented that costs have increased since the County took control of the airport. The main purpose for flights into and out of Fallbrook are personal (73 percent) with the next highest purpose being business (18 percent). Approximately $6,800 are spent by the owners in the area annually.

In the sections provided for comments, respondents indicated other items they would like to see at the airport. These are listed below in the order of frequency mentioned:

- Increased fuel availability
- FBO (with flight school, pilots lounge, and pilot supplies)
- Restaurant
- Taxiway improvements
- Tie-down improvements
- Runway extension/improvements/additional safety area
- Terminal building
- Public recreation/viewing area
- Live Unicom
- Beacon to be relocated
- VASI
- GPS approach

SURROUNDING LAND USE

The airport is located approximately two miles south of the Fallbrook city center. With the exception of residential development immediately north of the airport and east of Mission Road (Peppertree), the surrounding land use is primarily agriculture and open space. Recently constructed residential uses adjacent to the north airport boundary are located in very close proximity to the runway protection zone.

BUSINESS INVENTORY

The scope of work for the master plan included an inventory of businesses located at Fallbrook Community Airpark. This included aviation as well as non-aviation businesses. The business inventory provided the basis for an airport economic impact estimate contained in Appendix C. The inventory of Fallbrook Community Airpark businesses is summarized in Table 3-5. Currently there are four agricultural businesses, four aviation businesses and three community recreation tenants leasing land at the Airpark. Agriculture makes up the majority of leased land at the airpark accounting for 149 acres.

Table 3-5
INVENTORY OF LEASES AT
FALLBROOK COMMUNITY AIRPARK

Business Name/Organization Name	Type of Business	Acres	Leased Until
McDaniel Brothers, LLC	Agricultural Lease	21.80	April 30, 2010
McDaniel Brothers, LLC	Agricultural Lease	19.74	April 30, 2010
Color Spot Nurseries	Agricultural Lease	26.39	June 30, 2011
Color Spot Nurseries	Agricultural Lease	19.57	June 20, 2008
Jackson-Hartley Partnership	Agricultural Lease	16.47	June 30, 2015
Subtropical Fruit Company	Agricultural Lease	45.18	May 15, 2014
Fallbrook Air Service, Inc.	Aviation Lease	6.40*	October 23, 2018
Fallbrook Flyers, LLC	Aviation Lease	0.98	June 30, 2032
L18 Airpark Corporation	Aviation Lease	4.48	May 31, 2033
Aircraft Hangar Management, LLC	Aviation Lease	6.16	February 28, 2033
Fallbrook Sports Association	Community Recreation	18.49	August 18, 2018
Fallbrook Community Youth Baseball Council	Community Recreation	10.00	Annual date of renewal
Dorothy Putnam Roth/Fallbrook Tennis Club	Community Recreation	7.00	May 31, 2015

* Includes a 2.69 acre area for which Fallbrook Air Service, Inc. has a right of first refusal option.

Chapter 4
Aviation Demand Forecasts

Chapter 4
Aviation Demand Forecasts

INTRODUCTION

This chapter presents the aviation demand forecasts for the Fallbrook Community Airpark master plan.

Background

Prudent planning for the physical development of an airport requires a reasonable forecast of aviation activity at the subject facility. Once the forecasting tasks of the planning process have been completed, the airport planner can then translate the projected activity levels into required facilities. The forecast then serves as a basis for determining the phased development of the facility components for the short, intermediate and long-range planning periods.

Scope

The forecast developed for this study covers the period between 2001 and 2025. The base year for the forecast analysis was 2001. Intermediate year forecasts are also presented for 2007 and 2012. It is important to note that the forecasts presented herein represent unconstrained potential or "market-driven" demand, without consideration of the physical, safety, noise, regulatory, institutional, or political constraints that may preclude development of facilities to fully serve the demand.

Forecasts have been prepared for the following elements:

- Based aircraft: total and by aircraft type.
- Aircraft movements: total, by type, local versus itinerant, peak hour, and time of day.
- Avgas fuel flowage.

It is important to note that due to the uncertainties in the long-range aviation outlook, long-term forecasting is approximate in nature. However, an indication of trends is important since estimates can be made of facility costs, social costs and environmental impacts, which an airport creates on the surrounding area. Thus, the purpose of the forecasting effort is to identify activity levels, which then serve as planning tools.

FORECAST OF BASED AIRCRAFT

A based aircraft is one that is permanently stationed at an airport, usually by some form of agreement between the aircraft owner and airport management or a fixed base operator. This forecast value is used in developing projections of aircraft activity, as well as determining facility requirements for airport elements such as aprons and hangars.

The approach used to forecast based aircraft at Fallbrook Community Airpark involved the following steps: (i) project total based aircraft in the Fallbrook Community Airpark Competitive Market Area (CMA); (ii) forecast the share of based aircraft in the CMA served at Fallbrook; (iii) project the fleet mix of aircraft based at Fallbrook. The methodology and assumptions used in each step are described below.

Total Based Aircraft in Fallbrook Community Airpark Competitive Market Area

Fallbrook Community Airpark is located in the unincorporated community of Fallbrook in northwest San Diego County. Fallbrook Community Airpark competes as a location for based aircraft with other public use airports in western San Diego County, south Orange County and southwest Riverside County. Competitive airports in the CMA include Oceanside Municipal Airport, McClellan Palomar Airport, French Valley Airport, Ramona Airport, Montgomery Field, Lindbergh Field, Gillespie Field, and Hemet-Ryan Airport.

Between 1990 and 2001, based aircraft in the CMA increased by a total of 13 percent, from 2,674 in 1990 to 3,015 in 2001 (see Table 4-1). Annual changes in the number of based aircraft in the CMA were variable with some years experiencing increases and others experiencing declines. Over the period, total aircraft based at these airports have varied from a low of 2,604 in 1995 to a high of 3,015 in 2001. Much of the increase in based aircraft in the CMA after 1995 is due to the opening of French Valley Airport in southwest Riverside County in 1996. The 161 aircraft based at the airport in 1996 appear to largely have come from outside the CMA because there was not a corresponding drop in based aircraft at other airports in the CMA. If French Valley Airport is removed from the based aircraft numbers, the total increase in based aircraft in the CMA over the 1990 to 2001 period was seven percent.

Due to a variety of factors mentioned in Chapter 3 of this report, it is anticipated that the market for general aviation aircraft will increase in the CMA. For purposes of projecting the number of based aircraft in the CMA, future demand for general aviation based aircraft was tied to regional trends projected by the FAA 2001 Terminal Area Forecast (TAF). FAA forecasts, rather than socioeconomic growth in the CMA, were used to forecast future demand because changes in regional based aircraft have not historically been related to socioeconomic activity. Using this approach, the total number of based aircraft in the CMA is forecast to increase from 3,015 in 2001 to 3,839 in 2025 (see Table 4-2).

Total Based Aircraft at Fallbrook Community Airpark

Historically, Fallbrook Community Airpark has hosted an average of 3.4 percent of the general aviation aircraft based in the CMA. This rate has varied from a low of 1.8 percent to as much as 4.2 percent, as may be noted in Table 4-1. The low of 1.8 percent experienced in 2001 was due to a significant reduction in hangar space at the airport, forcing the relocation of almost 50 aircraft to other airports in the CMA. These hangars were replaced, and approximately 21 new hangars will be available for occupancy in 2006.

For purposes of this forecast, the following assumptions were made regarding Fallbrook's future share of the based aircraft market in the CMA:

- Baseline Forecast: Approximately 75 percent of the new hangars and shade structures being built at the airport will be occupied by aircraft relocating from other airports in the CMA, resulting in 125 based aircraft at the airport in 2005 (four percent of CMA based aircraft). Under this scenario, the market capture represents Fallbrook's stabilized market capture in the CMA. This scenario reflects a condition where Fallbrook Community Airpark's competitive position in the market is similar to historic circumstances.

Table 4-1
BASED AIRCRAFT IN THE
FALLBROOK COMMUNITY AIRPARK CMA

Year	Fallbrook L18	French Valley F70	Hemet-Ryan HMT	McClellan Palomar CRQ	Montgomery Field MYF	Oceanside Municipal OKB	Ramona RNM	Lindbergh Field SAN	Brown Field SDM	Gillespie Field SEE	Total
Total Based Aircraft											
1990	87	na	336	447	545	173	133	21	230	702	2,674
1991	98	na	336	351	545	128	217	11	218	731	2,635
1992	98	na	341	351	521	128	206	11	218	824	2,698
1993	98	na	341	351	521	128	206	11	218	806	2,680
1994	111	na	341	292	521	78	205	20	203	844	2,615
1995	100	na	344	292	521	72	205	10	202	858	2,604
1996	98	161	344	465	558	72	206	2	202	769	2,877
1997	98	161	404	496	546	66	206	11	202	731	2,921
1998	100	161	404	496	546	66	191	11	202	731	2,908
1999	100	161	404	480	630	66	191	11	169	765	2,977
2000	100	161	404	500	630	72	164	11	169	774	2,985
2001	54	281	404	395	630	81	196	7	146	821	3,015
Percent Total Based Aircraft (Market Share)											
1990	3.3%	na	12.6%	16.7%	20.4%	6.5%	5.0%	0.8%	8.6%	26.3%	100.0%
1991	3.7%	na	12.8%	13.3%	20.7%	4.9%	8.2%	0.4%	8.3%	27.7%	100.0%
1992	3.6%	na	12.6%	13.0%	19.3%	4.7%	7.6%	0.4%	8.1%	30.5%	100.0%
1993	3.7%	na	12.7%	13.1%	19.4%	4.8%	7.7%	0.4%	8.1%	30.1%	100.0%
1994	4.2%	na	13.0%	11.2%	19.9%	3.0%	7.8%	0.8%	7.8%	32.3%	100.0%
1995	3.8%	na	13.2%	11.2%	20.0%	2.8%	7.9%	0.4%	7.8%	32.9%	100.0%
1996	3.4%	5.6%	12.0%	16.2%	19.4%	2.5%	7.2%	0.1%	7.0%	26.7%	100.0%
1997	3.4%	5.5%	13.8%	17.0%	18.7%	2.3%	7.1%	0.4%	6.9%	25.0%	100.0%
1998	3.4%	5.5%	13.9%	17.1%	18.8%	2.3%	6.6%	0.4%	6.9%	25.1%	100.0%
1999	3.4%	5.4%	13.6%	16.1%	21.2%	2.2%	6.4%	0.4%	5.7%	25.7%	100.0%
2000	3.4%	5.4%	13.5%	16.8%	21.1%	2.4%	5.5%	0.4%	5.7%	25.9%	100.0%
2001	1.8%	9.3%	13.4%	13.1%	20.9%	2.7%	6.5%	0.2%	4.8%	27.2%	100.0%

Source: FAA 2001 Terminal Area Forecast; FAA 5010 Airport Master Record database; Airport records.

- High Growth Forecast: Growth at Fallbrook through 2005 will match the Baseline Scenario, i.e., based aircraft that relocated to other airports in 2000 will return to Fallbrook upon completion of the new hangars and shade structures. After 2005, Fallbrook's future market capture will increase by 50 percent, from 4.0 percent in 2005 to 6.0 percent by 2025. This scenario reflects a condition where Fallbrook Community Airpark becomes more competitive in the market area due to changing conditions at other airports, such as declining attractiveness and the potential closure of Oceanside and the increasing congestion and relatively higher costs of basing aircraft at Palomar.

- Low Growth Forecast: Fallbrook's future market capture will remain at the 2001 level of 1.8 percent. This scenario reflects a condition where current conditions at Fallbrook Community Airpark represent the long-term competitiveness in the market area and that the lack of additional facilities, such as hangars and shade structures, are not providing a constraint to growth.

Applying these assumptions to the total number of based aircraft forecast for the CMA results in the projections of based aircraft at Fallbrook Community Airpark shown in Table 4-2.

As may be noted, under the Baseline Forecast based aircraft at Fallbrook Community Airpark increase from 54 in 2001 to 153 by 2025. Under the Low Growth and High Growth Scenarios, based aircraft at the Airport reach 69 and 230, respectively.

Fleet Mix of Aircraft Based at Fallbrook

The forecast of the fleet mix of based aircraft at Fallbrook Community Airpark was based on the existing 2001 fleet mix, modified to reflect future trends shown in the FAA's 2001 Terminal Area Forecast.

When applied to the total number of based aircraft forecast to locate at the airport these assumptions result in the forecast of based aircraft by type shown in Table 4-3. Single engine piston aircraft are expected to be the predominant type of based aircraft located at Fallbrook.

Comparison with Other Forecasts

Two other recent forecasts of based aircraft have been prepared for Fallbrook Community Airpark. These forecasts, the 2001 Terminal Area Forecast (TAF) prepared by the FAA[1] and the 1999 Statewide Forecasts prepared by the California Department of Transportation (CALTRANS)[2], are summarized in Table 4-4.

As may be noted, the FAA 2001 TAF is approximately 27 percent lower than the Baseline Forecast by the year 2015 (the last year of the TAF). However, the lower forecast is due to historic trends at the airport, whereby based aircraft remained constant at about 100. Airport staff indicated this historic level was held constant due to a lack of facilities to accommodate additional aircraft, and that if additional facilities had been available there would have been increases in the number of aircraft based at the airport. Therefore, the higher number of based aircraft forecast under the Baseline Scenario appears reasonable. The 1999 CASP is equal to the Baseline Forecast by the year 2020.

FORECAST OF AIRCRAFT OPERATIONS

An aircraft operation, or movement, is defined as either a takeoff or landing, with each operation being categorized as either local or

[1] FAA, *2001 Terminal Area Forecast Database*, December 2001.
[2] CALTRANS Aeronautics Program, *1999 Statewide Forecasts, The California Aviation System Plan*, September 1999.

Table 4-2
BASED AIRCRAFT FORECAST
FALLBROOK COMMUNITY AIRPARK

Year	Market Area	Based Aircraft					
		Baseline		High Growth		Low Growth	
		Total	% Market	Total	% Market	Total	% Market
Actual							
1990	2,674	87	3.3%	87	3.3%	87	3.3%
1995	2,604	100	3.8%	100	3.8%	100	3.8%
2001	3,015	54	1.8%	54	1.8%	54	1.8%
Forecast							
2007	3,197	127	4.0%	134	4.2%	57	1.8%
2012	3,351	134	4.0%	157	4.7%	60	1.8%
2025	3,839	153	4.0%	230	6.0%	69	1.8%

Source: P&D Aviation.

Table 4-3
FORECAST OF BASED AIRCRAFT BY TYPE
FALLBROOK COMMUNITY AIRPARK

Type	Actual					
	1990	1995	2001	2007	2012	2025
Baseline Forecast						
Single Engine	87	97	54	125	131	150
Multi Engine	-	3	-	2	2	3
Total	87	100	54	127	134	153
High Growth Forecast						
Single Engine	87	97	54	132	154	226
Multi Engine	-	3	-	2	3	4
Total	87	100	54	134	157	230
Low Growth Forecast						
Single Engine	87	97	54	56	59	68
Multi Engine	-	3	-	1	1	1
Total	87	100	54	57	60	69

Source: P&D Aviation.

Table 4-4
COMPARISON OF BASELINE FORECAST OF BASED AIRCRAFT
WITH FAA 2001 TAF AND 1999 CASP
FALLBROOK COMMUNITY AIRPARK

Year	Forecast			% Difference from Baseline	
	Baseline	2001 TAF	1999 CASP	2001 TAF	1999 CASP
Total Based Aircraft					
2000	100	100	110	0.0%	10.0%
2005	125	100	121	-20.0%	-3.2%
2010	131	100	129	-23.7%	-1.6%
2015	138	100	136	-27.3%	-1.1%
2020	146	NA	146	NA	0.0%
Percent Annual Change					
2000 - 2015	2.1%	0.0%	1.4%		
2000 - 2020	1.9%	NA	1.4%		

Source: P&D Aviation; FAA 2001 TAF, 1999 CASP.

itinerant. A local operation is one that is performed by aircraft that: 1) operate in the local traffic pattern or within sight of the airport; 2) are known to be departing for or arriving from flights in local practice areas located within a 20-mile radius of the airport; or 3) execute simulated instrument approaches or low passes at the airport. Itinerant operations are all operations other than local.

Annual Operations

An aircraft operation traffic counter was installed at the airport in 2002 but due to down-time for repairs the counter was operational for only eight months. Based on these data, annual operations in 2002 were estimated at 20,896. This figure is considerably higher than previous year estimates, which were estimated without the information from the traffic counter. Discussions with Airport staff indicate that total operations in prior years were likely similar to the 2002 levels. However, the mix of local versus itinerant operations has changed. In the past, the majority of the operations were itinerant, with relatively little local training activity. With the decline in based aircraft experienced in 2001, the number of itinerant operations declined. This was balanced by an increase in local operations from training activities originating from Oceanside and Palomar. Airport staff estimated that local operations represented 60 percent of total operations in 2002, or approximately 12,500 operations.

The technique used to develop the forecast of operations was to project local and itinerant operations separately and then add the two to arrive at total operations. Itinerant operations were forecast using the 2002 estimated itinerant operations per based aircraft (155) applied to projected based aircraft at the airport. Local operations were forecast to increase at the same rate of increase as

total based aircraft in the market area. Operations by type of aircraft were based on the projected based aircraft fleet mix.
The results of the Baseline, High Growth and Low Growth forecast are shown in Table 4-5 and Table 4-6. As may be noted, under the Baseline Forecast, total annual aircraft operations at Fallbrook are projected to increase from 20,900 in 2002 to almost 40,000 by 2025. Under the High Growth Scenario, total annual operations reach 52,000 by 2025; under the Low Growth Scenario, annual operations total almost 27,000 movements by 2025. Single-engine aircraft are forecast to account for the largest share of operations.

Comparison with Other Forecasts

The 2001 Terminal Area Forecast (TAF) and the 1999 Statewide Forecasts also provided recent forecasts of aircraft operations for the airport. For the reasons noted previously, the 2001 TAF and 1999 CASP forecasts are substantially lower than the Baseline Forecast (see Table 4-7). However, given the updated and more accurate operations data used in the current projections, the current forecasts are considered reasonable.

Aircraft Operations by Time of Day

This subsection presents a forecast of aircraft operations by time of day. Aircraft operations were forecast for the following time periods: Day (between 7 a.m. and 7 p.m.); Evening (between 7 p.m. and 10 p.m.); and, Night (between 10 p.m. and 7 a.m.), and are shown in Table 4-8. The source of distribution of aircraft operations by time of day was the Aircraft Noise Exposure Report prepared for Fallbrook in May 2000.[3]

Peak Hour Aircraft Operations

Peak hour aircraft operations (the highest number of operations in an hour) are forecast for the average day of the peak month (ADPM). The peak month (the month of the year with the highest activity) was assumed to account for approximately 10 percent of annual aircraft operations. The average day number of operations is obtained by dividing peak month activity by 30 days. The peak hour was assumed to be 12 percent of ADPM operations. Table 4-9 presents the forecast of peak hour airport operations

FUEL FLOWAGE FORECAST

Fuel flowage was projected using historic ratios of fuel usage to annual flight hours. FAA data[4] indicates that for the fleet mix anticipated at Fallbrook, aircraft utilization will average 150 flight hours per year at an average fuel burn of 12.5 gallons per hour. These data were applied to the number of based aircraft to project fuel flowage. While it is understood that based aircraft will not purchase all their fuel at their base airport, use of these data will account for fuel purchased at the base airport by transient aircraft. Projected fuel flowage using this approach is shown in Table 4-10.

[3] Brown-Buntin Associates, Inc., *Aircraft Noise Exposure Report, Fallbrook Community Airpark, Fallbrook, California*, May 16, 2000.
[4] Federal Aviation Administration, *Economic Values for Evaluation of Federal Aviation Administration Investment and Regulatory Programs*, June 1998.

Table 4-5
ANNUAL AIRCRAFT OPERATIONS BY TYPE
FALLBROOK COMMUNITY AIRPARK

Year	Total	Local Operations
Actual		
2002	20,896	12,500
Baseline Forecast		
2007	33,100	13,300
2012	34,700	13,900
2025	39,700	15,900
High Growth Forecast		
2007	34,100	13,300
2012	38,300	13,900
2025	51,700	15,900
Low Growth Forecast		
2007	22,100	13,300
2012	23,200	13,900
2025	26,600	15,900

Source: P&D Aviation.

Table 4-6
FORECAST OF GENERAL AVIATION OPERATIONS BY TYPE
FALLBROOK COMMUNITY AIRPARK

Aircraft Type	Estimated 2002	Forecast 2007	Forecast 2012	Forecast 2025
Baseline Forecast				
Single Engine	20,478	32,548	34,122	39,038
Multi Engine	418	552	578	662
Total	20,896	33,100	34,700	39,700
High Growth Forecast				
Single Engine	20,478	33,417	37,653	50,609
Multi Engine	418	683	647	1,091
Total	20,896	34,100	38,300	51,700
Low Growth Forecast				
Single Engine	20,478	21,657	22,808	26,039
Multi Engine	418	443	392	561
Total	20,896	22,100	23,200	26,600

Source: P&D Aviation

Table 4-7
COMPARISON OF BASELINE FORECAST OF AIRCRAFT OPERATIONS
WITH FAA 2001 TAF AND 1999 CASP
FALLBROOK COMMUNITY AIRPARK

	Forecast			% Difference from Baseline	
Year	Baseline	2001 TAF	1999 CASP	2001 TAF	1999 CASP
Total Operations					
2002	20,896	8,800	10,067	-57.9%	-51.8%
2005	32,400	8,800	10,648	-72.8%	-67.1%
2010	34,000	8,800	11,352	-74.1%	-66.6%
2015	35,700	8,800	11,968	-75.4%	-66.5%
2020	37,800	NA	12,848	NA	-66.0%
Percent Annual Change					
2002 - 2015	4.2%	0.0%	1.3%		
2002 - 2020	3.3%	NA	1.4%		

Source: P&D Aviation; FAA 2001 TAF, 1999 CASP.

Table 4-8
ANNUAL AIRCRAFT OPERATIONS BY TIME OF DAY
FALLBROOK COMMUNITY AIRPARK

	Estimated	Forecast		
	2002	2007	2012	2025
Baseline Forecast				
Annual Operations	20,896	33,100	34,700	39,700
Day (7 am - 7 pm)	17,762	28,135	29,495	33,745
Evening (7 pm - 10 pm)	2,090	3,310	3,470	3,970
Night (10 pm - 7 am)	1,045	1,655	1,735	1,985
High Growth Forecast				
Annual Operations	20,896	34,100	38,300	51,700
Day (7 am - 7 pm)	17,762	28,985	32,555	43,945
Evening (7 pm - 10 pm)	2,090	3,410	3,830	5,170
Night (10 pm - 7 am)	1,045	1,705	1,915	2,585
Low Growth Forecast				
Annual Operations	20,896	22,100	23,200	26,600
Day (7 am - 7 pm)	17,762	18,785	19,720	22,610
Evening (7 pm - 10 pm)	2,090	2,210	2,320	2,660
Night (10 pm - 7 am)	1,045	1,105	1,160	1,330

[1] Assumes operations distributed as follows: Day - 85%; Evening - 10%; Night - 5%.

Source: Brown-Buntin Associates (distribution by time of day); P&D Aviation.

Table 4-9
FORECAST OF PEAK HOUR AIRCRAFT OPERATIONS
DURING THE AVEARAGE DAY PEAK MONTH
FALLBROOK COMMUNITY AIRPARK

	Estimated	Forecast		
	2002	2007	2012	2025
Baseline Forecast				
Annual Operations	20,896	33,100	34,700	39,700
Peak Month Percentage	10.0%	10.0%	10.0%	10.0%
Peak Month Operations	2,090	3,310	3,470	3,970
Days in Peak Month	30	30	30	30
ADPM Operations	70	110	116	132
Peak Hour Factor	12%	12%	12%	12%
Peak Hour Operations	8.4	13.2	13.9	15.8
High Growth Forecast				
Annual Operations	20,896	34,100	38,300	51,700
Peak Month Percentage	10.0%	10.0%	10.0%	10.0%
Peak Month Operations	2,090	3,410	3,830	5,170
Days in Peak Month	30	30	30	30
ADPM Operations	70	114	128	172
Peak Hour Factor	12%	12%	12%	12%
Peak Hour Operations	8.4	13.7	15.4	20.6
Low Growth Forecast				
Annual Operations	20,896	22,100	23,200	26,600
Peak Month Percentage	10.0%	10.0%	10.0%	10.0%
Peak Month Operations	2,090	2,210	2,320	2,660
Days in Peak Month	30	30	30	30
ADPM Operations	70	74	77	89
Peak Hour Factor	12%	12%	12%	12%
Peak Hour Operations	8.4	8.9	9.2	10.7

Source: P&D Aviation.

Table 4-10
POTENTIAL FUEL FLOWAGE REQUIREMENTS
FALLBROOK COMMUNITY AIRPARK

	Forecast		
	2007	**2012**	**2025**
Baseline Forecast			
Based Aircraft	127	134	153
Average Annual Utilization (flight hours)	150	150	150
Average Fuel Burn (gallons per hour)	12.5	12.5	12.5
Annual Fuel Requirement (gallons)	238,909	250,417	286,885
High Growth Forecast			
Based Aircraft	134	157	230
Average Annual Utilization (flight hours)	150	150	150
Average Fuel Burn (gallons per hour)	12.5	12.5	12.5
Annual Fuel Requirement (gallons)	251,250	294,375	431,250
Low Growth Forecast			
Based Aircraft	57	60	69
Average Annual Utilization (flight hours)	150	150	150
Average Fuel Burn (gallons per hour)	12.5	12.5	12.5
Annual Fuel Requirement (gallons)	106,875	112,500	129,375

Source: P&D Aviation.

Chapter 5
Facility Requirements

Chapter 5
Facility Requirements

INTRODUCTION

Chapter 4 produced a forecast of traffic volumes expected to be generated at the airport during the 20-year forecast period. The next step in the planning process is to determine the type and magnitude of airport facilities that will be needed during the 20-year period to satisfactorily accommodate future traffic volumes.

The process of determining facility requirements involves the application of acceptable airport planning standards to the various forecast components to identify the needed facilities that will provide sufficient capacity to handle the expected traffic. By comparing the sizes and capacities of the future facility needs with existing facility sizes and capacities, facility deficiencies can be determined and quantified.

The deficiencies are then resolved by increasing facility capacities over a three-phase development program. This chapter of the report will deal with the calculation of theoretical airport facility requirements as discussed above. The facilities developed through this planning process must be considered theoretical at this time because they have not been related to existing facilities. In Chapter 6, Airport Plans, the recommended improvements derived from the facility requirements will be delineated in a series of plans and drawings. During this process, adjustments to the facility requirements may be necessary and the resulting facilities become the basis of the recommended development program.

The uncertainty of long-range forecasting was noted in Chapter 4, and a range of forecasts was provided. In the interest of preparing a plan capable of accommodating a wide range of options, the analysis of facility requirements will use the "High Growth" forecasts as these will present the greatest requirement for aviation facilities. In this regard, the airport layout plan will provide sufficient protection and flexibility in terms of aeronautical uses on the airport. This will also permit potential surplus land to be designated for revenue enhancing uses without compromising the airport's ability to fulfill its air transportation role. It is important to note that it will be actual demand that dictates the eventual development of facilities and not forecast demand. Thus, the use of the "High Growth" forecast does not commit the County to construct the facilities associated with projected demand. It is also noted that the Major Use Permit limits the number of based aircraft at the airport to 300. While the long-term High Growth forecast is less than this limit, the facility requirements for the maximum number of aircraft allowed by the Major Use Permit are also defined herein for reference.

Airport facility requirements are grouped into the two main operating elements - the airside facilities and the landside facilities. Before addressing the facility requirements, a brief discussion of airport classification is presented.

AIRPORT CLASSIFICATION

Fallbrook functions in several roles as defined by FAA and explained in Chapter 3. First, it is a general aviation airport, which means it does not receive scheduled commercial air service. Fallbrook Community Airpark is contained in the National Plan of Integrated Airport Systems (NPIAS) and is classified as a general aviation airport. The airport is also contained in the California Aviation System Plan (CASP) and is classified as a Community Airport. As explained in Chapter 3, this classification of the state applies to airports that provides access to other regions and states; is located near small communities; serves, but are not limited to, recreation flying, training, and local emergencies; accommodates predominately single engine aircraft under 12,500 pounds; and, provides basic or limited services for pilots or aircraft.

The FAA in its current AC 150/5300-13, Airport Design, Change 9 dated 9/26/05, has developed an airport reference code (ARC) which is a coding system that relates airport design criteria and planning standards to two components: the operational and physical characteristics of aircraft operating at or expected to operate at the airport. It is an alphanumeric code with the numeric component consisting of a Roman numeral. The letter element of the code is the aircraft approach category and thus relates to operational characteristics. Aircraft approach category is an aircraft grouping based on 1.3 times the stalling speed as follows:

Category	Speed
A	Speed less than 91 knots
B	Speed 91 knots or more but less than 121 knots
C	Speed 121 knots or more but less than 141 knots
D	Speed 141 knots or more but less than 166 knots
E	Speed 166 knots or more

The second component of the ARC is the airplane design group and relates to the wingspan of aircraft and therefore is a physical characteristic. The grouping of aircraft by wingspan (Aircraft Design Group) is as follows:

Airplane Design Group	Wingspan
I	Up to but not including 49 feet
II	49 feet up to but not including 79 feet
III	79 feet up to but not including 118 feet
IV	118 feet up to but not including 171 feet
V	171 feet up to but not including 214 feet
VI	214 feet up to but not including 262 feet

The aircraft approach speed element of the ARC will generally deal with runways and runway related facilities whereas the wingspan (and relevant Airplane Design Group) relates to separations required between airfield elements, i.e., runway-taxiway separations, taxilane and apron clearances, etc.

For this master plan the airport is designated as code A-I for small airplanes (less than 12,500 pounds maximum certificated takeoff weight). Planning standards contained in FAA AC 150/5300-13, Airport Design, Change 9 dated 9/26/05, will be applied in this study based on standards for an Airport Reference Code of A-I for small airplanes. The existing constraints prevent the accommodation of larger aircraft and more demanding airport design standards. Table 5-1 presents the relevant airport planning standards to be used in this study.

Table 5-1
AIRPORT PLANNING STANDARDS
FOR AIRPORT REFERENCE CODE A-I (SMALL AIRPLANES EXCLUSIVELY)

AIRPORT DESIGN AIRPLANE AND AIRPORT DATA

Aircraft Approach Category A
Airplane Design Group I (Small Airplanes Exclusively)
Airplane wingspan ..... 48.99 feet
Primary runway end approach visibility minimums are not lower than 1 mile
Other runway end approach visibility minimums are visual exclusively
Airplane undercarriage width (1.15 x main gear track) ..... 15.00 feet
Airport elevation ..... 708 feet

SEPARATION STANDARDS

Runway centerline to parallel runway centerline ..... 700 feet
wider runway separation may be required for capacity (See AC 150/5060-5)
Runway centerline to parallel taxiway/taxilane centerline ..... 149.5 150 feet
Runway centerline to edge of aircraft parking ..... 125.0 125 feet
Taxiway centerline to parallel taxiway/taxilane centerline ..... 68.8 69 feet
Taxiway centerline to fixed or movable object ..... 44.3 44.5 feet
Taxilane centerline to parallel taxilane centerline ..... 63.9 64 feet
Taxilane centerline to fixed or movable object ..... 39.4 39.5 feet

RUNWAY PROTECTION ZONES

Runway protection zone Runways 18 and 36:
Length ..... 1,000 feet
Width 200 feet from runway end ..... 250 feet
Width 1,200 feet from runway end ..... 450 feet

OBSTACLE FREE ZONES

Runway obstacle free zone (OFZ) width ..... 250 feet
Runway obstacle free zone length beyond each runway end ..... 200 feet
Inner-approach obstacle free zone width ..... NA
Inner-approach obstacle free zone length beyond approach light system ..... NA
Inner-approach obstacle free zone slope from 200 feet beyond threshold ..... NA
Inner-transitional surface obstacle free zone slope ..... NA

RUNWAY DESIGN STANDARDS

Runway width ..... 60 feet
Runway shoulder width ..... 10 feet
Runway blast pad width ..... 80 feet
Runway blast pad length ..... 60 feet

Table 5-1
AIRPORT PLANNING STANDARDS
FOR AIRPORT REFERENCE CODE A-I (SMALL AIRPLANES EXCLUSIVELY)
(continued)

RUNWAY DESIGN STANDARDS (continued)

Runway safety area width	120 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater	240 feet
Runway object free area width	250 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater	240 feet
Clearway width	500 feet
Stopway width	60 feet

TAXIWAY DESIGN STANDARDS

Taxiway width	25.0	25 feet
Taxiway edge safety margin		5 feet
Taxiway shoulder width		10 feet
Taxiway safety area width	49.0	49 feet
Taxiway object free area width	88.6	89 feet
Taxilane object free area width	78.8	79 feet
Taxiway wingtip clearance	19.8	20 feet
Taxilane wingtip clearance	14.9	15 feet

Source: FAA Advisory Circular 150/5300-13, Airport Design, Change 9 dated 9/26/05.

AIRFIELD CAPACITY REQUIREMENTS

Annual and Hourly Capacity

Hourly runway capacities and annual service volume (ASV) estimates are needed to design and evaluate airfield development and improvement projects. The approach for estimating airport capacity in this study used general capacity estimates contained in FAA AC 150/5060-5, Airport Capacity and Delay. Figure 2-1 of the advisory circular contains various runway configurations and associated hourly and annual capacities that are suitable for long-range planning. Specifically, runway sketch 1 of the figure reflects the Fallbrook runway layout, namely a single runway. For a general aviation airport aircraft mix the corresponding annual capacity (Annual Service Volume) is identified as 230,000 operations. This also corresponds with data reflected in the latest FAA Terminal Area Forecast. Therefore, for the purpose of this airport master plan an annual capacity of 230,000 operations will be assumed. An hourly VFR capacity estimate of 98 operations is also identified. Based on Figure 4-26 of the Advisory Circular an hourly IFR capacity of 20 operations is assumed.

It should be noted that the ASV represents the capacity of the present airport. It is also important to note the capacity of an airport is not constant and may vary over time depending upon airfield improvements, airfield or airspace geometry, ATC procedures, weather and mix of aircraft operating at the airport. The capacity of an airport can change with or without airfield improvements.

Demand Versus Capacity

By comparing ASV and hourly capacities with the forecast annual and peak hour demand, the relationship between demand and capacity can be determined. Table 5-2 presents the comparisons of demand versus capacity and as seen the present airfield will accommodate demand through the planning period.

Table 5-2
DEMAND VERSUS CAPACITY

	2007	2012	2025
ANNUAL:			
Demand	34,100	38,300	51,700
Capacity	230,000	230,000	230,000
% Capacity Utilized	15	17	22
HOURLY VFR:			
Demand	14	16	21
Capacity	98	98	98
% Capacity Utilized	14	16	21

Throughout the twenty year planning period capacity is very adequate and the relationship of demand and capacity is well below a threshold when capacity improvements are usually considered. Generally, capacity improvements should be recommended when demand is forecast to utilize 60 percent of capacity. This allows sufficient lead time to develop the improvement before the airport becomes saturated. Airport activity levels warranting capacity improvements are contained in FAA Order 5090.3B. As seen in Table 5-2, the forecast demand utilizes approximately 20 percent of annual and hourly capacity, which is well below the 60 percent planning threshold.

From this comparison of demand and capacity it is concluded that airfield capacity is sufficient to accommodate forecast operations (and it is noted that in this case the High Growth forecast has been assumed). Considering the runway length and exit taxiways (that enhance capacity) and existing constraints, opportunities for capacity enhancements appear limited. However, the planning of the ALP development should consider capacity enhancements in the ultimate layout of the airfield where practical.

AIRSIDE FACILITY REQUIREMENTS

As discussed earlier, the airside operating element as used in this report includes the runway and taxiway system, the runway approach areas and the associated appurtenances such as airfield lighting, visual aids and navigation aids. With the exception of aircraft aprons which, due to their interface with terminal facilities, are analyzed as a landside element, airside refers to those airport areas where aircraft operations are conducted. The ability of the present airside facilities to accommodate existing and future traffic loads and the facilities required through the year 2025 are examined in the following subsections.

Runway System

The existing runway system was described in Chapter 3. This section will deal with runway requirements needed to satisfy the forecast demand in terms of runway length, pavement strength requirement, crosswind coverage and safety areas. Planning and design standards set forth in FAA AC 150/5300-13, Airport Design, Change 9 dated 9/26/05, for Airport Reference Code A-I (for Small Airplanes Exclusively) form the basis of this analysis. The existing constraints prevent the accommodation of larger aircraft and more demanding airport design standards.

Crosswind Runway

The existing runway provides 98.95 percent coverage for a 10.5 knot (12 mph) crosswind, and 99.56 percent coverage for a 13 knot (15 mph) crosswind. FAA states in AC 150/5300-13, Airport Design, Change 9 dated 9/26/05, that the allowable crosswind is 10.5 knots for Airport Reference Codes A-I and B-I. The coverage meets the FAA recommendation of 95 percent crosswind coverage, thus additional runways for improved crosswind coverage are not required.

Runway Length

This subsection deals with the runway length requirements for the existing runway at Fallbrook. Runway length is a critical consideration in airport planning and design. Aircraft need specified runway lengths to operate safely under varying conditions of wind, temperature and takeoff weight.

FAA Advisory Circular 150/5325-4B, Rrunway Length Requirements for Airport Design, dated 7/1/05, contains criteria used in developing runway lengths required for various general aviation utility and transport airports. The recommended runway lengths are based on performance information from manufacturer's flight manuals in accordance with provisions in FAR (Federal Aviation Regulations) Part 23, Airworthiness Standards: Normal, Utility and Acrobatic Category Airplanes, and FAR 91, General Operating and Flight Rules.

Aircraft performance together with significant site characteristics are considered in analyzing runway length. The site characteristics that are evaluated include: airport elevation, temperature (mean maximum temperature of the hottest month), runway gradient and wind conditions. The FAA Airport Design (Version 4.1) software package contains a program to calculate typical runway requirements for various classes of aircraft. This model was applied by P&D and the results are presented in Table 5-3. The airport site characteristics used in the runway length analysis were:

- Elevation - 708 feet MSL
- Temperature – 83.7°F
- Maximum Difference in Runway Centerline Elevation – 8 feet
- Surface Winds - Calm

The critical aircraft for Fallbrook are small airplanes (less than 12,500 pounds). As seen in the table, the recommended runway lengths for these aircraft range from 2,680 to 3,820 feet, (to accommodate all small aircraft).

The present length of Runway 18-36 is 2,160 feet which is estimated to satisfy the requirements for approximately 50 percent of all small airplanes (those aircraft with low approach speeds, i.e., Approach Category A). Considering existing constraints, extension of the runway does not appear feasible and therefore the airport reference code should be based on Approach Category A.

Table 5-3
FAA RECOMMENDED RUNWAY LENGTHS
FOR FALLBROOK COMMUNITY AIRPARK

AIRPORT AND RUNWAY DATA

Airport elevation	708 feet
Mean daily maximum temperature of the hottest month	83.7° F
Maximum difference in runway centerline elevation	8 feet
Length of haul for airplanes of more than 60,000 pounds	500 miles

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots	320 feet
Small airplanes with approach speeds of less than 50 knots	860 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,680 feet
95 percent of these small airplanes	3,200 feet
100 percent of these small airplanes	3,820 feet
Small airplanes with 10 or more passenger seats	4,290 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	4,790 feet
75 percent of these large airplanes at 90 percent useful load	6,410 feet
100 percent of these large airplanes at 60 percent useful load	5,450 feet
100 percent of these large airplanes at 90 percent useful load	8,130 feet

Sources: FAA Advisory Circular 150/5325-4A, Runway Length Requirements for Airport Design.
P&D application of FAA Airport Design (Version 4.1).

Runway Width

Runway width is a dimensional standard that is based upon the physical and performance characteristics of aircraft using the airport (or runway). The characteristics of importance are wingspan and approach speeds. In this case, FAA Airplane Design Group I (wingspans up to but not including 49 feet) and Approach Category A are used and will provide adequate width and separation for current and anticipated aircraft operations. FAA AC 150/5300-13 specifies a runway width of 60 feet for an Airport Reference Code of A-I. The present width of Runway 18-36 meets the standard.

Runway Grades

The maximum longitudinal grade is 2.0 percent for the critical aircraft at Fallbrook (Approach Category A). Runway 18-36 conforms to standards as the effective runway gradient is 0.36 percent. There is only an eight foot difference between the high and low points along the runway centerline, therefore, the overall longitudinal grade of the runway is not an issue. However, there are other airfield gradient issues that deviate from FAA design standards. These were addressed in a separate assessment of airfield development options. During the Airfield Assessment, a dip near the northern end of the runway was discovered which exceeds the maximum allowable longitudinal grade.

The runway should have adequate transverse slopes to prevent the accumulation of water on the surface. A maximum transverse grade of 1.0 to 2.0 percent is recommended for the airport by FAA. As noted in Chapter 3, a grade difference between the runway and Taxiway A is approximately six feet. This will be an item to be addressed as part of the assessment of airfield development options.

Pavement Strength

As mentioned in Chapter 3 a pavement management was recently completed for the airport. Based on information contained in the study, the pavement strength rating for Runway 18-36 is 5,900 pounds for single wheel landing gears and 8,400 pounds for dual wheel landing gears. Taxiway and apron pavements have also been rated.

The runway strength was determined to be adequate for single wheel landing gears, but deficient for dual wheel landing gears. It was also noted that Taxiway A, the stub taxiway connecting to the FBO access taxiway, midfield turnoff pavement, and the helicopter area are deficient in terms of pavement strength. The pavement management study contains recommendations for pavement maintenance and rehabilitation. Rehabilitation of airfield pavements should follow recommendations of the pavement management study.

Runway Blast Pads

A runway blast pad provides blast erosion protection beyond runway ends. Runway 18-36 requires a blast pad that is 80 feet wide and 60 feet long.

Runway Safety Areas

A runway safety area is defined as a rectangular area centered about the runway that is cleared, drained, graded and usually turfed. Under normal conditions, this area should be capable of accommodating occasional aircraft that may veer off the runway, as well as fire fighting equipment. For Fallbrook, the existing and planned requirement for the runway is an area 120 feet wide centered on the runway centerline and extending 240 feet beyond each runway end. There are specific FAA clearing and grading standards for runway safety areas.

The runway safety areas do not meet FAA design standards. Deficiencies may be generally described as follows. For Runway 18 the slope off the end of the runway and access road violates runway safety area standards. The severe drop off the end of Runway 36 also does not meet design standards. Topography along the edge of the runway, most notably near the automobile parking/observation area does not meet grading requirements. An assessment of runway safety areas and the identification of potential options is the subject of a separate task of the master plan work program and is included as Appendix D of this report.

Runway Object Free Areas

The runway object free area (ROFA) is a two dimensional ground area surrounding the runway and its clearing standard precludes parked aircraft, agricultural operations and objects, except those fixed by function. The criterion replaces the former design standard of the aircraft parking limit line and is designed with the intention of providing adequate wing-tip clearance. The design standards for an ARC of A-I call for a ROFA extending 125 feet on either side of the runway centerline and extending 240 feet beyond the end of the runway. Object free areas also exist for taxiways and are 89 feet wide (44.5 feet on either side of centerline) for Airplane Design Group I.

The automobile/observation area was reconfigured to remove vehicle parking from the runway object free area. The ROFA clearing standard requires clearing of the OFA of above ground objects protruding above the runway safety area edge elevation. The hill near the observation area protrudes above the required runway safety area edge elevation and therefore does not comply with ROFA standards. An assessment of runway object free areas and the identification of potential options is included in Appendix D of this report.

Approach Surfaces and Runway Protection Zones

The approach surface and the runway protection zone (formerly called clear zone) are important elements in the design of runways which help to ensure the safe operations of aircraft. A brief description of these two areas follows:

- **The Approach Surface** is an imaginary inclined plane beginning at the end of the primary surface and extending outward to distances up to 10 miles depending on runway use (i.e., instrument or visual approaches). The width and slope of the approach surface are also dependent on runway use. The approach surface governs the height of objects on or near the airport. Objects should not penetrate or extend above the approach surface. If they do, they are classified as obstructions and must be either marked or removed.

- **The Runway Protection Zone (Clear Zone)** is an area at ground level that provides for the unobstructed passage of landing aircraft through the above airspace and is used to enhance the protection of people and property on the ground. The runway protection zone begins at the end of the primary surface and has a size which varies with the designated use of the runway.

Federal Aviation Regulations Part 77 indicates that the approach surface should be kept free of obstructions to permit the unrestricted flight of aircraft in the vicinity of the airport. As the type of instrument approach to a runway becomes more precise, the approach surface increases in size and the required approach slope becomes more restrictive.

The runway protection zone is the most critical safety area under the approach path and should be kept free of all obstructions. No structure should be permitted nor the congregation of people allowed within the runway protection zone. Control of the runway protection zone by the airport owner is essential. It is desirable, therefore, that the airport owner acquire adequate property interests, preferably in fee title, in the runway protection zone to ensure compliance with the above.

As indicated above, the approach and runway protection zone dimensions are dependent on the type of approach being made to a runway. Presented in Table 5-4 are runway protection zone dimensions for various type runways. The runway protection zone for Runway 18 extends beyond airport property. The County acquired control of the runway protection zone through an avigation easement.[1]

Taxiways

Runway 18-36 has a centerline-to-centerline separation from Taxiway A of 85 feet. The FAA AC 150/5300-13, Airport Design, Change 8 dated 9/26/05 states the separation should be 150 feet.

The standard width for the taxiways for Airplane Design Group I airplanes is 25 feet. Taxiway A is 20 feet wide and does not meet the requirement. Widening of this taxiway should be considered. Longitudinal grades along Taxiway A are excessive and do not meet design standards. This is addressed as part of the assessment of airfield development options (Appendix D).

[1] Avigation easement, Parcel No. 104-251-18, Recorded February 28, 1990, San Diego County.

Table 5-4
RUNWAY PROTECTION ZONE DIMENSIONS

Approach Visibility Minimums	Facilities Expected To Serve	Runway Protection Zone Dimensions			
		Length (Feet)	Inner Width (Feet)	Outer Width (Feet)	Area (Acres)
Visual and Not lower than 1 mile	Small Aircraft Exclusively	1,000	250	450	8.035
	Aircraft Approach Categories A & B	1,000	500	700	13.770
	Aircraft Approach Categories C & D	1,700	500	1,010	29.465
Not lower than ¾ mile	All Aircraft	1,700	1,000	1,510	48.978
Lower than ¾ mile	All Aircraft	2,500	1,000	1,750	78.914

Source: FAA Advisory Circular 150/5300-13, Airport Design, Change 9 dated 9/26/05.

Airspace and Navigational Aids

The airspace in the vicinity of Fallbrook is primarily influenced by Restricted Area 2503 to the west. The restricted area accommodates operations associated with Camp Pendleton. Presently the airport is served by a nonprecision GPS approach to Runway 18. The airport is an uncontrolled facility as there is no FAA control tower, and has visual aids as previously described in Chapter 3.

Staff at the SOCAL TRACON have recommended the development of a GPS procedure for Runway 36 to reduce potential airspace interactions with instrument approaches to Munn Field (Camp Pendleton). This should be pursued by the County.

Runway 18 is equipped with a unique type of Visual Approach Slope Indicator (VASI) system that is based on alternating red and white lights. The FAA recommends that PAPI be installed as the visual glide path aid at airports under Airport Improvement Program funding grants. Therefore, the replacement of the existing VASI with PAPI at some point during the planning period should be considered as needed. The timing of this project should be considered as part of runway safety area/object free area enhancement projects.

The FAA document Airway Planning Standard Number One-Terminal Air Navigation Facilities and Air Traffic Control Services (FAA Order 7031.2C) contains criteria for identifying candidate airports for NAVAIDS and visual aids. The criteria for NAVAIDS are based upon the number of annual instrument approaches (AIA) and for visual aids, criteria are keyed to the number of annual landings per runway.

Based upon criteria in FAA Order 7031.2C, Runway 18 qualifies for the installation of a PAPI system in the long-term. A runway is a candidate for a visual glide path aid if the annual number of GA landings on a non-ILS runway are at least 14,000. For Runway 18 approximately 18,000 landings are estimated for the year 2025. As mentioned above, replacement of the existing VASI with a PAPI should be considered as part of runway safety area enhancement projects.

A runway is a candidate for runway end identifier lights (REIL) if there are at least 7,300 annual GA and military landings per year, is not currently equipped or programmed for an approach light system, and is lighted and approved for night operations. These lights provide rapid and positive identification of the approach end of a runway and consist of two synchronized flashing lights located on each side of the runway threshold. Based on qualifying criteria for the installation of REILs, Runway 18 qualifies for the installation of REIL in the short-term and Runway 36 qualifies for the installation of REIL in the long-term.

LANDSIDE FACILITY REQUIREMENTS

The airport landside system is comprised of all facilities supporting the movement of passengers and goods between the community's ground transportation system and the airport's airside system, and also any facilities used in the maintenance or protection of those facilities. For Fallbrook, these include general aviation terminal/administration building, aircraft storage and services, and airport support facilities. The landside elements, together with the previously discussed airside elements, form all of the airport development facilities required to accommodate the forecast level of traffic.

Since the airfield development program has been based upon an ultimate level of some 51,700 operations and 230 based aircraft, the planning of landside facilities should be based upon striking a balance of airside and landside capacity. The determination of general aviation and support area facilities has been accomplished for the three future planning periods of 2007 (short term), 2012 (medium term) and 2025 (long term).

Under the Major Use Permit (MUP) the number of based aircraft at Fallbrook Community Airpark is limited to 300. While the forecast projects 230 based aircraft for the year 2025, it is useful to identify the requirements for the maximum number of based aircraft permitted by the Major Use Permit. Therefore, the ultimate extent of airport development associated with the Major Use Permit will be known and is included in the presentation of facility requirements. The following subsections present the rationale for determining future landside facility requirements to serve the general aviation role of the airport.

Administration/Terminal Building

The amount of terminal space required is based upon the expected demand, i.e., the peak hourly volume of pilots and passengers who will use the facilities. A planning standard of 49 square feet per peak hour pilot/passengers is used to determine the required area. Table 5-5 shows the breakdown of the planning standard. An estimated 2.5 pilot/passengers are assumed per peak hour operation. Table 5-6 shows the building requirements that were calculated using the above approach.

Table 5-5
DERVIATION OF REQUIREMENTS FOR
GENERAL AVIATION TERMINAL BUILDINGS

Operational Use	Area Required (SF)
Waiting Area/Pilot's Lounge	15
Management Operations	3
Public Conveniences	1.5
Concessions, Dining, etc.	5
Circulation, Mechanical, Maintenance	24.5
Total	49

Note: Space requirements for circulation, mechanical and maintenance should be allocated equally among other terminal building uses in calculating total building requirements.

Table 5-6
GENERAL AVIATION TERMINAL AREA REQUIREMENTS

Item	2007	2012	2025	Major Use Permit
Peak Hour Operations	14	15	21	25
Total Peak Hour Occupants	35	38	53	63
Area/Occupant (SF)	49	49	49	49
Total Building Area (SF)	1,715	1,862	2,597	3,087

Source: P&D Aviation

The present administration/terminal building totals approximately 400 square feet and is used solely by County airport management. Presently there is no terminal building at the airport. As Table 5-6 illustrates a terminal area requirement of approximately 2,600 square feet is estimated in 2025 and approximately 3,100 square feet is needed under the conditions of the Major Use Permit. As seen in Table 5-5, allowances are included for dining and airport management functions. The requirements shown in Table 5-6 represent minimum requirements, and depending on specific needs for restaurant and airport administrative functions may be increased.

Aircraft Parking Apron

Aircraft parking apron is required primarily for visiting transient aircraft as most based aircraft are stored in hangars. These are aircraft that land at Fallbrook, but are based elsewhere. A busy itinerant day is derived from the average day of the peak month forecasts (ADPM) of aircraft activity and forms the basis of estimating transient parking apron requirements. Currently all transient aircraft park along Taxilane E, west of the runway. Transient aircraft parking apron requirements are determined by applying the following assumptions to itinerant movements performed by transient aircraft on an ADPM. Summarized in Table 5-7 are the transient apron requirements.

- Transient operations are approximately 60 percent of itinerant aircraft operations.

- The majority of transient aircraft will arrive and depart on the same day, thus it is assumed that the actual number of aircraft utilizing the parking apron is one-half (50 percent) of the transient movements being performed on the average day of the peak month.

- During the planning period, 50 percent of the transient aircraft will be on the ground at any given time.

- Thus, 25 percent of transient operations will be temporarily parked on the transient apron.

- Single engine aircraft require 2,700 square feet (300 square yards) of apron space; and multi-engine aircraft require 5,625 square feet (625 square yards).

Table 5-7
TRANSIENT AIRCRAFT TO BE ACCOMMODATED
ON TRANSIENT AIRCRAFT APRON

Number of Aircraft to be Accommodated	2007	2012	2025	Major Use Permit
Annual Transient Operations	12,480	14,640	21,480	28,020
Peak Month Transient Operations	1,248	1,464	2,148	2,802
ADPM Transient Operations	42	49	72	93
Number of Aircraft Parked	11	12	18	23
Size of Transient Aircraft Apron				
Single Engine: Number of Aircraft [a]	10	11	17	22
Area/Aircraft (SY)	300	300	300	300
Apron Area (SY)	3,000	3,300	5,100	6,600
Multi- Engine: Number of Aircraft [a]	1	1	1	1
Area/Aircraft (SY)	625	625	625	625
Apron Area (SY)	625	625	625	625
Total Aircraft	11	12	18	23
Total Apron Area (SY)	3,625	3,925	5,725	7,225

[a] Based upon estimated mix of transient aircraft

Source: P&D Aviation

The analysis concludes that roughly 5,700 square yards of apron for 18 aircraft are required to accommodate transient demand in 2025. The present transient area provides tie-down space for 11 aircraft and compared to the requirement the present number of spaces is adequate to accommodate requirements through the short-term. Based upon the maximum number of aircraft permitted by the Major Use Permit, approximately 7,200 square yards for 23 aircraft are required. Therefore, a deficiency of 7 transient tie-downs is present in the long-term and a deficiency of 12 tie-downs is found at maximum permitted based aircraft levels. The ultimate location of transient parking to be identified in the master plan will determine the extent of transient parking apron to be constructed for the recommended airport layout.

Based Aircraft Storage

Aircraft based at the airport can be stored either by occupying a paved tie-down parking space or by storage within a hangar. The number of aircraft stored in hangars varies according to the economics of providing hangars and the severity of weather conditions prevailing at the airport location. The mix of hangars and tie-downs may vary depending on actual demand. The number of based aircraft at Fallbrook may increase from the present level of approximately 112 to 230 aircraft in the year 2025. Adequate storage facilities should be provided to accommodate forecast based aircraft. In determining the demand for the various types of storage it is assumed that 60 percent of the based aircraft will be stored in a hangar. This is consistent with recent trends at the airport and neighboring airports.

There are two types of hangars, conventional, bay-type hangars and T-hangars, with most hangars at the airport being T-hangars. T-hangars are "T" shaped hangars designed for the storage of individual aircraft while conventional hangars are large structures that will accommodate several aircraft of different sizes in an open bay. In this case, T-hangars could also include individual, rectangular, executive-size hangars or "box" hangars. For the purpose of this analysis, T-hangar requirements are determined as number of spaces, or units.

Table 5-8 summarizes the T-hangar requirements determined in this analysis.

Table 5-8
BASED AIRCRAFT STORAGE HANGAR
REQUIREMENTS – FALLBROOK COMMUNITY AIRPARK

	2007	2012	2025	Major Use Permit
Single Engine Piston				
Number of Based Aircraft	132	154	226	295
Number of Aircraft in T-Hangar*	79	92	136	221
Multi-Engine Piston				
Number of Based Aircraft	2	3	4	5
Number of Aircraft in T-Hangar*	1	2	2	4
Total Based Aircraft	134	154	230	300
Total Aircraft Hangared	80	94	138	225
Required Rectangular and T-Hangars (Spaces)	80	94	138	225

* Represents required T-hangar space.

Source: P&D analysis.

As mentioned previously, there are present plans to develop 23 hangar spaces. When added to the number of existing T-hangar facilities, the facility requirements for aircraft storage hangars through 2012 are met. In the long-term planning period (through 2025), there will be a need to add 7 more hangars. Based upon the maximum number of aircraft permitted by the Major Use Permit, a total of 87 additional hangar spaces are projected after present development proposals are completed. While T-hangars are expected to be the primary means of housing based aircraft, the airport layout plan should also consider providing space for construction of conventional hangars for aircraft storage or servicing.

Three approaches are available to the County in providing hangars. The first would involve leasing land to aircraft owners and allowing them to construct their own hangars. To assure uniformity in construction as well as visually pleasing results, the airport owner (the County) could control the type of hangar built by a clause in the land lease. An alternative to the above would be for the

airport owner to construct the hangars and then rent or lease them to aircraft owners. If this approach is followed, firm commitments for their use should be made before construction of the hangars are undertaken. A third approach is to have a complex of hangars built by a private party on property leased by the airport, as is the case with the Fallbrook Flyers hangars and other hangar proposals at the airport.

The alternative to aircraft storage hangars is to provide space on the parking apron with tie-down facilities to secure the aircraft during severe weather or periods of high winds. Approximately 40 percent of based aircraft are assumed to require tie-down space. As previously indicated, the mix of hangars and tie-downs may vary depending on actual demand. For planning purposes, allowances of 300 square yards for single engine and 625 square yards for multi-engine aircraft are assumed. Table 5-9 represents the apron area required at Fallbrook for based aircraft.

Table 5-9
BASED AIRCRAFT TIE-DOWN AREA
REQUIREMENTS – FALLBROOK COMMUNITY AIRPARK

	2007	2012	2025	Major Use Permit
Single Engine Piston				
Number of Based Aircraft	132	154	226	295
Number of Aircraft Tied-Down	53	62	90	118
Area/Aircraft (SY)	300	300	300	300
Apron Area (SY)	15,900	18,600	27,000	35,400
Multi-Engine Piston				
Number of Based Aircraft	2	3	4	5
Number of Aircraft Tied-Down	1	1	2	2
Area/Aircraft (SY)	625	625	625	625
Apron Area (SY)	625	625	1,250	1,250
Total Based Aircraft	134	154	230	300
Total Aircraft Tied-Down	54	63	92	120
Total Apron Area (SY)	16,525	19,225	28,250	36,650

Source: P&D analysis.

The current plans for construction of hangars will involve space that is presently used for aircraft tie-downs. All but twelve existing based aircraft tie-downs will be eliminated and therefore there will be deficiencies of tie-downs. The deficiencies of based aircraft tie-downs are as follows: 42 tie-downs in 2007, 51 tie-downs in 2012, and 80 tie-downs in 2025. A total of 108 tie-downs would be required in order to accommodate the maximum number of aircraft permitted by the Major Use Permit.

Aircraft Maintenance Facilities

Maintenance facilities play an important role at an airport as they permit the based and transient aircraft to receive the full line of services necessary for safe flight. As discussed in Chapter 3, there is a 3,640 square foot maintenance hangar owned by one of the FBOs. The planning of future hangars should include additional maintenance facilities and for planning purposes it is assumed that the long-term requirements include 5,000 square feet of additional maintenance hangar space. The timing will be contingent on

demand and investment from the private sector. It should be noted that adequate apron should be planned for a maintenance hangar(s) with allowances for clearances between aircraft and buildings, aircraft towing/taxiing and parking positions for run-ups and maintenance checks

Automobile Parking

Parking areas must be provided at the airport for those using its facilities. The parking areas are designed to accommodate peak activity periods. A generally accepted value for computing the amount of general aviation parking space needed is 1.3 spaces per peak hour general aviation pilot/passenger. This factor takes into account airport employees, rental car spaces, and visitors as well as pilots/passengers. The area required per automobile is 350 square feet, which includes circulation routes and other necessary clearances within the parking area. Existing parking is provided at the administration building, the public viewing area, and the FBOs. The existing auto parking facilities were documented in Chapter 3 and total 94 spaces.

The projected auto parking requirements are summarized in Table 5-10. Based on the assessment of requirements, parking at the airport is adequate. As seen, the existing number of parking spaces meets the 2025 requirement. The provision of adequate auto parking facilities will be addressed during the preparation of the airport layout plan. For example, parking should be conveniently located with respect to a future general aviation terminal/administration building.

Table 5-10
AUTOMOBILE PARKING REQUIREMENTS

Item	2007	2012	2025	Major Use Permit
Peak Hour Operations	14	15	21	25
Total Occupants	35	38	53	63
Spaces/Occupant	1.3	1.3	1.3	1.3
Total Parking Spaces (Each)	46	49	69	82
Area/Parking Space (SF)	350	350	350	350
Total Parking Area (SF)	16,100	17,150	24,150	28,700

Source: P&D Aviation

Aircraft Rescue and Fire Fighting (ARFF) Facilities

FAA Advisory Circular 150/5210-6C establishes recommended scales of fire fighting protection for general aviation airports. Presented in the AC are two indices used in determining the level of protection based on the types of aircraft and the number of operations. The two indexes are as follows:

- Index 1 Airports having at least 1,825 annual departures of aircraft more than 30 feet but no more than 45 feet long.

- Index 2 Airports having at least 1,825 annual departures of aircraft more than 45 feet but no more than 60 feet long.

Based on the forecast of aircraft operations the airport does not meet requirements for ARFF facilities during the planning period.

Airport Maintenance

A modest airport maintenance facility should be planned to provide space for airport maintenance equipment, storage of airport supplies and a small work shop area. A requirement for a 2,500 square foot airport maintenance building will be assumed.

Aviation Fuel Storage

Bulk aviation gas (avgas) storage requirements were determined for the airport based upon the forecast of Avgas flowage contained in Chapter 4. The bulk avgas storage requirement is determined on the following basis:

- Peak month flowage is 10 percent of the annual flowage.
- Peak month is divided by 30 to determine the average day flowage in the peak month.
- A 14 day supply is provided.

Table 5-11 summarizes the fuel storage requirements. Considering the existing 12,000 gallon tank, it is seen that the requirement for 2007 is met. In subsequent years there is a deficiency of 1,734 gallons (2012) and 8,132 gallons (2025). This suggests that an additional storage tank be planned in the long-term planning period. An alternative to increasing the fuel storage capacity would be to receive more frequent fuel deliveries to the airport. As seen in Table 5-11, with a seven day fuel reserve the existing fuel tanks meet the long-term requirement. While the need for additional tanks may not be required, the planning of future facilities should provide sufficient space to accommodate construction of another fuel storage tank.

Table 5-11
AVIATION FUEL STORAGE REQUIREMENTS
(gallons)

Item	2007	2012	2025	Major Use Permit
Annual Flowage	251,250	294,375	431,250	562,500
Peak Month Flowage	25,125	29,438	43,125	56,250
Average Day Flowage in Peak Month	838	981	1,438	1,875
Storage Capacity (14-day reserve)	11,732	13,734	20,132	26,250
Storage Capacity (7-day reserve)	5,866	6,867	10,066	13,125

Source: P&D Aviation

GROUND ACCESS

The access roadway serving the airport (Mission Road) was recently improved and it is expected that the local roadway system should be adequate to accommodate airport generated traffic together with all other traffic. Further, the airport has paid the County land development section required contributions for access improvements.

LAND AREA REQUIREMENTS

The land use on an airport will vary depending on the role and volume of traffic. Nonetheless, the land uses can be broadly categorized into a few categories described herein.

The **aircraft operating area (AOA)** is defined as that area on-airport that lies within the building restriction lines (BRL) and runway protection zones (formerly clear zones). It includes the runways, taxiways, associated safety areas and lateral clearances, and runway approaches. The FAA defines the BRL as a line which identifies suitable building area locations and encompasses the runway protection zones, the runway object free area, the runway visibility zone, NAVAID critical areas, areas required for terminal instrument procedures (TERPS), and areas required for clear line of sight from a control tower.

Derived from this criteria, the BRL should be at least 125 feet from the runway centerline on the east side, and 45 feet from the centerline of Taxiway A on the west side (130 feet from the runway centerline). The present Airport Layout Plan indicates the BRL located 250 feet from the runway centerline which meets the BRL criteria.

Based on the above criteria, the AOA encompasses approximately 42 acres, with portions of the AOA encompassing existing agricultural uses. The latter are areas within the BRL and RPZ that encompass agricultural lease areas. Existing agricultural uses should be removed from the AOA to the extent practicable.

Areas of the airport serving landside aviation facilities can be categorized as **aeronautical use areas**. This would include general aviation uses such as storage hangars, tie-downs and transient aprons, general aviation terminal and administration building, potential FBO sites, and auto parking. The existing and proposed aeronautical lease areas total approximately 23 acres and are located at the northwest corner of the airport property.

The use of airport property for non-aviation purposes can enhance the revenue generating potential, and often can ensure the economic subsistence of the airport. Such land uses can be indicated on airport layout plans as **airport compatible use areas**. It is important that it be determined that accommodation of all anticipated requirements for aviation facilities be provided before consideration of non-aviation uses of airport property. Airport compatible uses would include business and office parks, industrial and light manufacturing, commercial and research and development uses. Existing compatible use areas at the airport include sports park, tennis club, and agricultural uses. The extent of airport area to be allocated for airport compatible uses depends on the extent of aviation facilities needed to accommodate forecast demand, and the demand for the non-aviation land uses. At Fallbrook, airport compatible use areas can be subdivided as agricultural and other non-aviation use areas.

The current airport is 290 acres. The breakdown of airport property is shown on Table 5-12. Areas classified as "Community Recreation" include the sports park and tennis club. The acreage shown is that which is currently within airport property and it should be noted that Runway Protection Zones are not entirely within the airport property line.

As seen, approximately half of the airport property (144 acres) is currently used for non-aeronautical purposes. Approximately 65 acres are in aeronautical use. The difference between existing aeronautical and non-aeronautical land uses (209 acres) and the total airport area (290 acres) is 81 acres. The future planning of the airport must determine the area required for aeronautical use to accommodate forecast demand and the land use designations specified in the Major Use Permit. The next chapter will analyze the future facility requirements in the context of accommodating them within the parameters of the Major Use Permit. The intent is to confirm that areas designated in the Major Use Permit as "Aviation Use" are adequate to accommodate facility requirements projected herein for the master planning period and the maximum number of based aircraft allowed by the Major Use Permit.

Table 5-12
LAND AREAS AT FALLBROOK

Category	Acreage
Aircraft Operating Area (AOA)	42
Aeronautical Use Areas	23
Agricultural	109
Community Recreation	35
Total Airport Acreage	290

Notes:
1. "Community Recreation" includes Fallbrook Sports Association (18 acres), Fallbrook Community Youth Baseball (10 acres), and Fallbrook Tennis Club (7 acres).
2. The difference between the total of the four land use categories and total airport acreage represents area for possible future aeronautical or non-aeronautical uses.

Source: P&D Aviation

Chapter 6
Airport Plans

Chapter 6
Airport Plans

INTRODUCTION

This chapter, Airport Plans, is intended to detail the total 20-year development program, as recommended by this master plan for Fallbrook Community Airpark. The design of the airport system as described herein is based upon the facility requirements discussed in Chapter 5 and the recommended development concept. This airport development program is intended to integrate existing facilities and improvements needed over the next twenty years within the framework of an implementation schedule.

This chapter is comprised of a text discussion and accompanying graphics, some of which are reductions of the large-scale plans prepared during the course of this study, that graphically depict the recommended development plan for Fallbrook Community Airpark. The overall development plan for the airport is depicted on the Airport Layout Plan (ALP). The ALP is a graphic presentation of existing and ultimate airport facilities and is a key document, which serves as a reference of aviation requirements, as well as land use and financial planning. The ALP represents an understanding between the airport sponsor and FAA regarding the current and future development of the airport. In order to receive federal funding assistance, proposed projects must be consistent with the ALP, and thus the ALP must be revised and periodically updated. The ALP also indicates the recommended phasing of airport development projects.

Preceding the presentation of airport plans is a discussion on the future development concept and the rationale upon which it is based. The concept defines, in general terms, the different areas on-airport, and the type of development recommended for each area. It therefore is the basis for the ALP. The facility requirements analysis concluded that in the interest of prudent planning the ALP should accommodate long-term (2025) facility requirements and the maximum number of based aircraft (300) allowed in the Major User Permit (MUP).

BASIS OF CONCEPT DEVELOPMENT

The recommended concept is influenced by five primary factors. These are facility requirements derived from forecasts of aviation demand, facility improvements to enhance safety, providing a flexible plan, which accommodates new aviation uses, the existing terrain at the airport, and land use limitations imposed by the existing MUP. Since the development of the concept acknowledged these factors, it is believed the future recommended development will result in a plan that will satisfy future aviation demand, accommodate demand safely, efficiently, and in conformance with FAA standards, and permit the airport to react to potential changes in demand within the limitations imposed by the MUP and terrain.

Major Use Permit (MUP)

Pursuant to the County of San Diego Zoning Ordinance, a use permit is required for land uses with special site or design requirements, operational characteristics, or potential adverse effects on surrounding communities. Where necessary, the

imposition of special conditions of approval of the permit are specified by the granting County authority. A Major Use Permit (MUP) is a use permit under the jurisdiction of the Planning Environmental Review Board or the Planning Commission. A Major Use Permit was first granted to the County of San Diego Department of Public Works for the Fallbrook Community Airpark in October 1963. The current Major Use Permit Modification is dated December 3, 1999 and was granted to the County Department of Public Works by the San Diego County Planning Commission.

The Major Use Permit allows a maximum of 300 based aircraft and the existing aviation and non-aviation (civic uses, wholesale agriculture and recreational uses). It allows future aviation uses including, but not limited to, sale or rental of airplanes; sale of airplane equipment, parts, and supplies; service and maintenance of airplanes; storage of airplanes and airplane parts; flying schools; airport administration offices; and a restaurant.

Future non-aviation uses allowed include expansion of existing agricultural use types and tennis club. All other future non-aviation uses are limited to community recreation; participant sports and recreation; and other civic uses deemed appropriate.

Figure 6-1 presents the various uses designated in the current Major Use Permit Modification and is based on the master plot plan for the airpark. As seen, aviation uses are confined to the northwest corner of the airpark property. Changes to the airfield will require modification to the Major Use Permit.

Airside Facilities

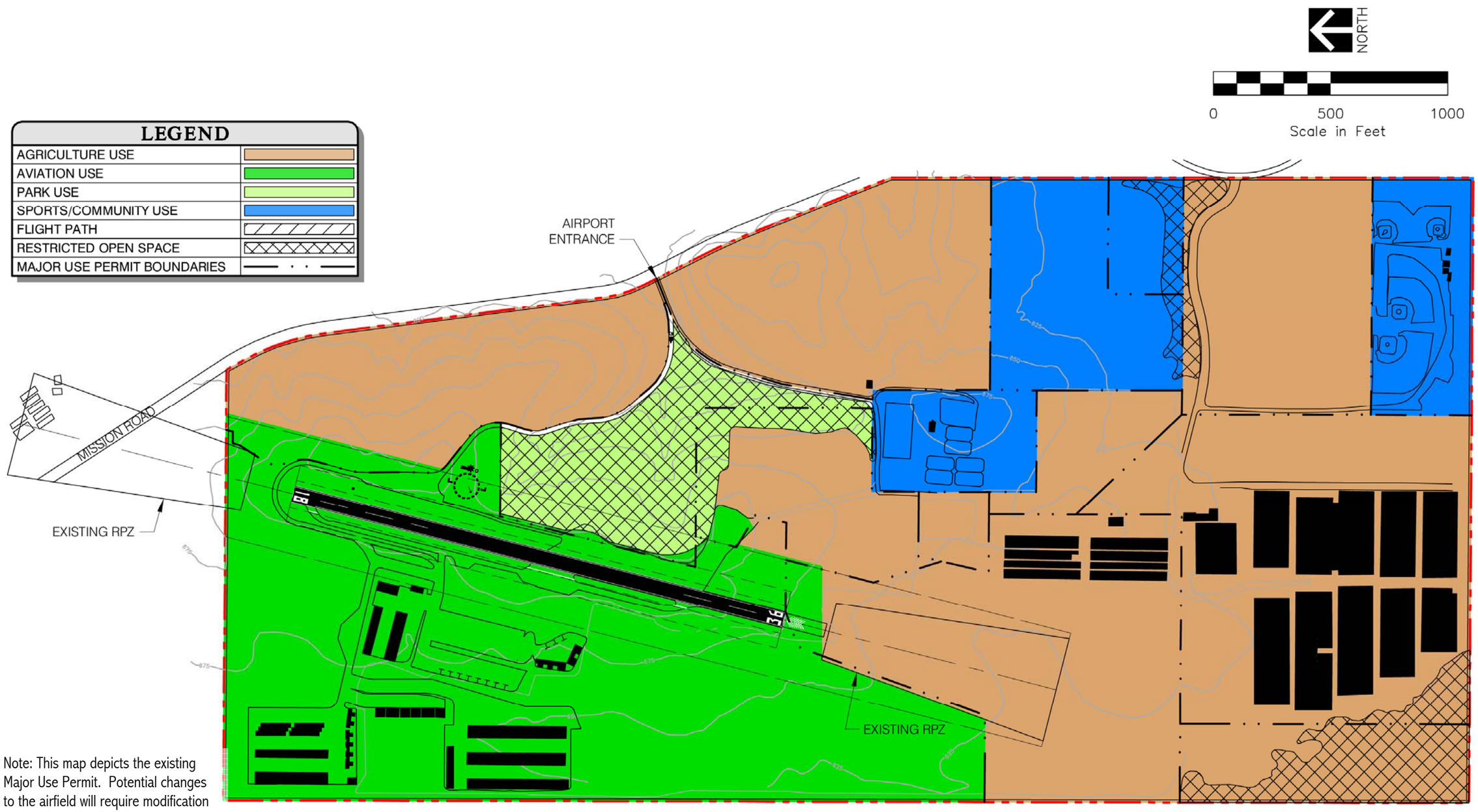
For airside elements, the recommended development concept primarily considered the results of an airfield assessment, and requirements for runway length and width, runway protection zones, taxiways, helicopter operations, and potential locations for a rotating beacon.

Airfield Assessment

As part of the master plan, an airfield assessment was performed that analyzed the existing airfield geometrics, existing terrain, and identified alternatives to mitigate deviations from FAA airport design standards to the extent practical. Specific areas of concern analyzed within this assessment were:

- Runway End Safety Area Grades
- Runway Longitudinal Grade
- Runway Safety Area Transverse Grades
- Runway to Taxiway Centerline Separation
- Taxiway Width
- Taxiway Safety Area Grades
- West Taxiway Longitudinal Grade
- Parallel Taxiway Longitudinal Grade.

The airfield assessment is included as Appendix D in this report. The assessment identified three potential projects, which address several of the eight areas of concern shown above. These are: translating the runway south 240 feet to provide standard runway safety areas; constructing a partial runway overlay to address runway longitudinal grades; and constructing a diagonal taxiway on the south end which addresses or mitigates deviations from runway-taxiway separation, taxiway safety area, and taxiway longitudinal grades. In addition, Taxiway A will be extended to the future end of Runway 36 at a standard separation of 150 feet. The extension of the taxiway will promote safe and efficient operations by eliminating taxiing back on the runway.



Note: This map depicts the existing Major Use Permit. Potential changes to the airfield will require modification to the Major Use Permit.

Figure 6-1
Land Uses Designated in the Existing Major Use Permit

It should be emphasized the scope of the airfield assessment was intended to identify issues and possible options to address deviations from FAA design standards, and not final solutions. However, for the purpose of the master plan the three potential projects identified in the assessment and the extension of Taxiway A, are believed to be a practical approach for addressing airfield design standards, airport operations, and thus will be included in the master plan as recommended projects and reflected on the ALP. Figure 6-2 graphically depicts the three projects, which are believed to best address airfield design deficiencies in a practical manner.

Some of the issues directly impact or affect each other, such as, the runway-taxiway separation, taxiway longitudinal grades and runway-taxiway safety areas. The assessment noted that finding a solution for one of these should not be done without considering the impact on others. The assessment noted the potential for lowering the runway to accommodate transverse and longitudinal grades as an option worthy of further consideration, as well as the possible modification to the location and/or orientation of the runway. If there is interest in these alternatives, they should be investigated through additional study (which is beyond the scope of the master plan).

Runway Length and Width

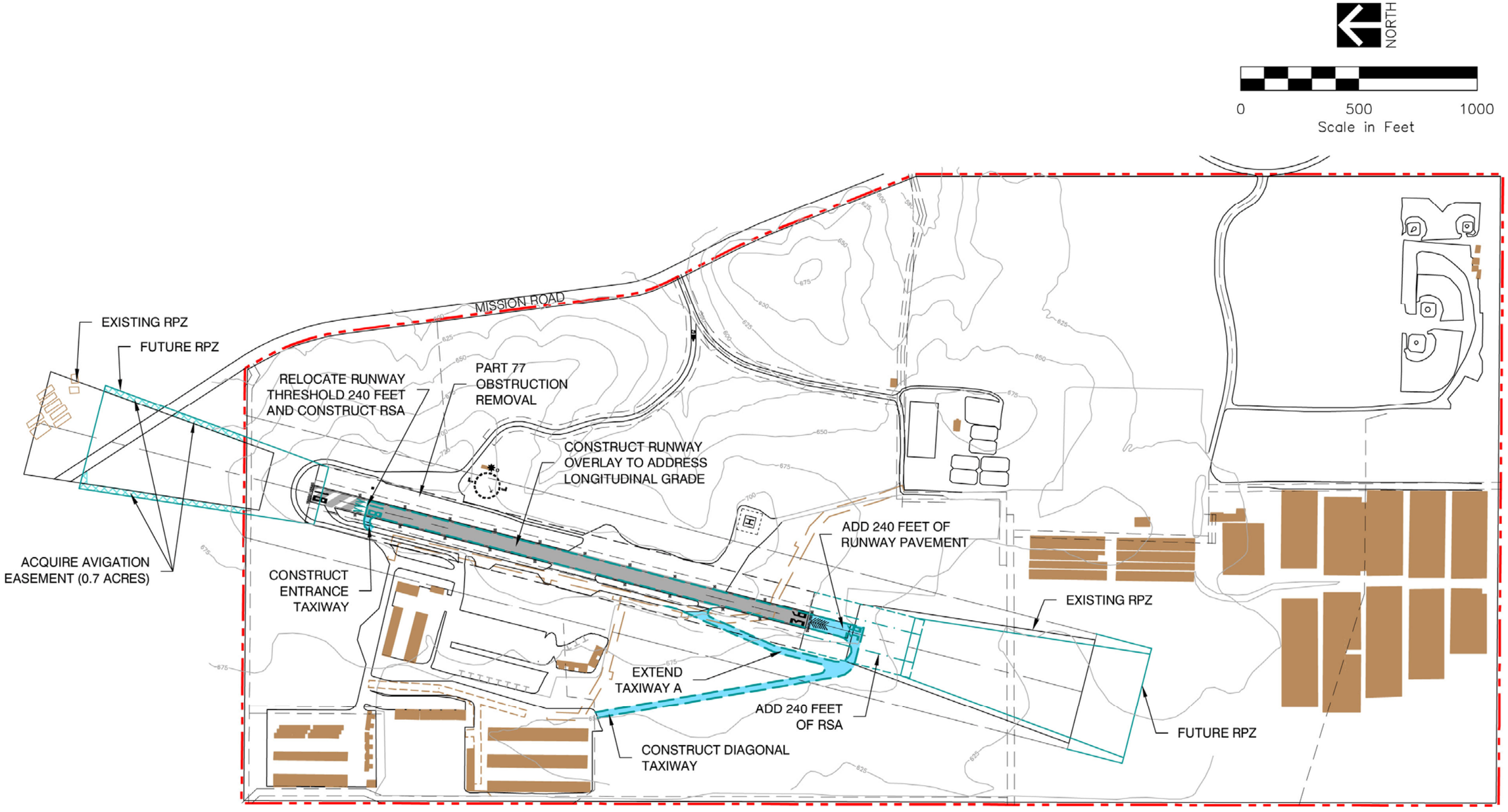
The runway is 60 feet wide and complies with FAA design standards for the category aircraft that predominantly operates at the airport. The runway length is sufficient to accommodate 50 percent of all small airplanes. While the runway length and width are sufficient, runway improvements are included within the concept to increase safety. The recommended concept plan depicts a translation of the runway to the south of 240 feet to provide standard runway safety area (RSA) beyond the Runway 18 end. This will require adding fill to the south end to accommodate the 240-foot translation and a RSA of 240 feet beyond Runway 36. The Runway 18 threshold will be relocated (240 feet to the south), which is different than a displaced threshold. The runway pavement on the north end affected by the relocation will not be usable for takeoffs or landings. This is necessary in order to meet FAA standards for the runway safety area.

Runway Protection Zones

Runway Protection Zones (RPZs) based on approach visibility minimums not lower than one mile for runways serving small aircraft exclusively have been applied to each runway end. The recommended RPZs for Fallbrook are trapezoidal in shape and have an inner width of 250 feet, an outer width of 450 feet, and are 1,000 feet long. Each RPZ encompasses 8.035 acres. The RPZs will be translated to the south along with the runway ends to correspond with the translated runway ends. This is beneficial on the north side of the airport (Runway 18) as only 5.7 acres of the RPZ will be outside airport property as opposed to the 7.4 acres, which currently lie off-airport property. However, this translation requires acquiring 0.7 acres of additional ground protection avigation easements. The Runway 36 RPZ will also be translated 240 feet to the south and will stay within airport property.

Federal Aviation Regulation Part 77 (FAR Part 77)

Existing terrain adjacent to the northeastern portion of the runway penetrates FAR Part 77 surfaces and is an obstruction. This area includes the segmented circle, public viewing area, administration building, and portions of the avocado grove east of Airpark Road. Specifically, the terrain penetrates the primary and transitional surfaces. Lowering the terrain to comply with Part 77 will require removal of approximately 40,000 cubic yards.



Note: The northernmost 240 feet of runway pavement may remain to provide a partially paved extended runway safety area.

Figure 6-2
Proposed Airfield Improvements

Taxiway Issues

Taxiway A is non-standard width, has a non-standard separation from the runway, and has non-standard longitudinal grades. The concept provides a diagonal taxiway, which connects the taxiway serving aircraft storage areas with the future end of Runway 36. This diagonal taxiway will be designed to FAA standards and reduce the use of the non-standard portions of Taxiway A as pilots landing on Runway 18 would continue to the end of the runway and utilize the proposed taxiway to return to based aircraft facilities located on the west side of the airport. Consistent with this, aircraft departing on Runway 18 will utilize the taxiway that connects Runway 18 with Fallbrook Air Service. The proposed diagonal taxiway will also reduce the potential for head-to-head encounters on the existing east/west taxiway. The recommended concept also extends Taxiway A at a standard separation of 150 feet to the future Runway 36 end. The extension of Taxiway A will allow for pilots making full-stop landings to taxi to Runway 18 without back taxiing on the runway or making a long journey back to Runway 18 using the diagonal and east/west taxiway.

Airfield Signage

As previously noted, there are no airfield signs at the airport. Due to the non-precision instrument approach and the configuration of the airfield, airfield signage is recommended. Signage should consist of runway hold signs, taxiway designator signs, and directional signs.

Helicopter Operations

The recommended concept incorporates a recently constructed helipad located on the existing transient ramp. The helipad (final approach and takeoff area) is separated from the runway centerline by 300 feet and helicopter operations are conducted directly to and from the helipad. This location was selected because it minimizes the mixing of helicopters and fixed-wing aircraft. Helicopter operators utilize the existing arrival and departure paths established at the airport to minimize noise and avoid sensitive areas.

Potential Rotating Beacon Locations

Presently the rotating beacon for the airport is located on top of the administration building. The recommended plan identifies two potential beacon locations in accordance with the criteria set forth in AC 170/6850-1 and stated below:

- The beacon may not be located closer than 350 feet from the runway centerline or extended centerline of the main runway.

- The beacon should not be more than 5,000 feet from the nearest point of the usable landing area except in cases where the surrounding terrain will unduly restrict the visibility of the beacon.

- The beacon should be located to minimize dazzle to pilots approaching to land.

Potential locations depicted on the recommended plan represent the highest terrain and meet the distance required from the runway centerline. One location is east of the administration building and the other location is on a hill east of the existing transient ramp in an existing avocado grove. It is noted the FAA will determine final siting of the beacon.

Landside Facilities

The development of landside facilities for the recommended concept considered areas available for potential development, based aircraft facilities, terminal facilities, terrain, and the Major Use Permit (MUP). The recommended concept satisfies the following general requirements as identified in Chapter 5, for the long-term (year 2025) and accommodates the 300-based aircraft limit specified in the MUP. Table 6-1 summarizes existing landside facilities, the long-term planning requirements, the additional facilities needed to meet 2025 requirements and the based aircraft population specified in the MUP.

Other items that will be included in the recommended concept are potential rotating beacon locations and a new electric vault. The following are provisions in the MUP and are reflected in the recommended concept: an emergency road from the existing transient ramp to the main access road of Color Spot and a road to serve the aeronautical lease areas.

Table 6-1
SUMMARY OF LANDSIDE FACILITY REQUIREMENTS

Description	Existing	Required 2025	Additional Facilities Needed 2025	MUP [b]
T-Hangars (Acft. Spaces) [a]	131	138	7	87
Tie-downs [a]	12	92	80	28
Terminal (Sq. Ft.)	0	2,600	2,600	500
Aircraft Maintenance (Sq. Ft.)	8,520	13,520	5,000 Building Plus Apron Area	None
Fuel tanks	1 tank (12,000 gal.)	2 tanks (24,000 gal.)	1 tank (12,000 gal.)	None
Airport Maintenance (Sq. Ft.)	0	2,500	2,500	None
Auto Parking (Spaces/Sq. Ft.)	58/11,500	69/24,150	11/12,650	13/4,550

[a] Existing facilities assume that development proposals by Aircraft Hangar Management and L18 Aircraft Storage are constructed.

[b] MUP facilities are in addition to facilities needed to meet 2025 requirements.

Development Areas

Due to the many physical limitations present at the airport and the constraints stipulated in the MUP, it was necessary to determine areas for potential development within the airport boundary. Six areas have been identified for possible aviation development and are consistent with uses designated in the MUP. Figure 6-3 depicts the six areas and the following is a discussion of the advantages and disadvantages of each area. Potential uses for each development area are also noted.

- **Development Area A.** This area presently accommodates the administration building, segmented circle, and wind tee. The MUP identifies the area adjacent to the south of Area A as being restricted open space and parkland uses. The terrain to the south also limits potential development for aviation use. The previous MUP identified Area A as a restaurant. Typically, restaurants at airports such as Fallbrook Community Airpark are located within the terminal/administration building to better serve transient pilots. Potential development for the area includes providing an airport maintenance building/facility (and associated parking), the segmented circle, and the electric vault.

POTENTIAL USES	
AREA	DESCRIPTION
A	AIRPORT MAINTENANCE BUILDING -AND-
	SEGMENTED CIRCLE
B	HELICOPTER AREA -OR-
	TERMINAL/TRANSIENT/RESTAURANT AREA
C	BASED AIRCRAFT STORAGE (ULTIMATE) -OR-
	TERMINAL/TRANSIENT/RESTAURANT AREA
D	BASED AIRCRAFT STORAGE
E	BASED AIRCRAFT STORAGE
F	TERMINAL/TRANSIENT/RESTAURANT AREA

LEGEND	
DEVELOPMENT AREA	
FUTURE AVIGATION EASEMENT	
EXTENDED RUNWAY CENTERLINE	
POTENTIAL AIRPORT BEACON SITE	
RUNWAY/TAXIWAY	
RUNWAY OBJECT FREE AREA (ROFA)	
RUNWAY PROTECTION ZONE (RPZ)	
RUNWAY SAFETY AREA (RSA)	

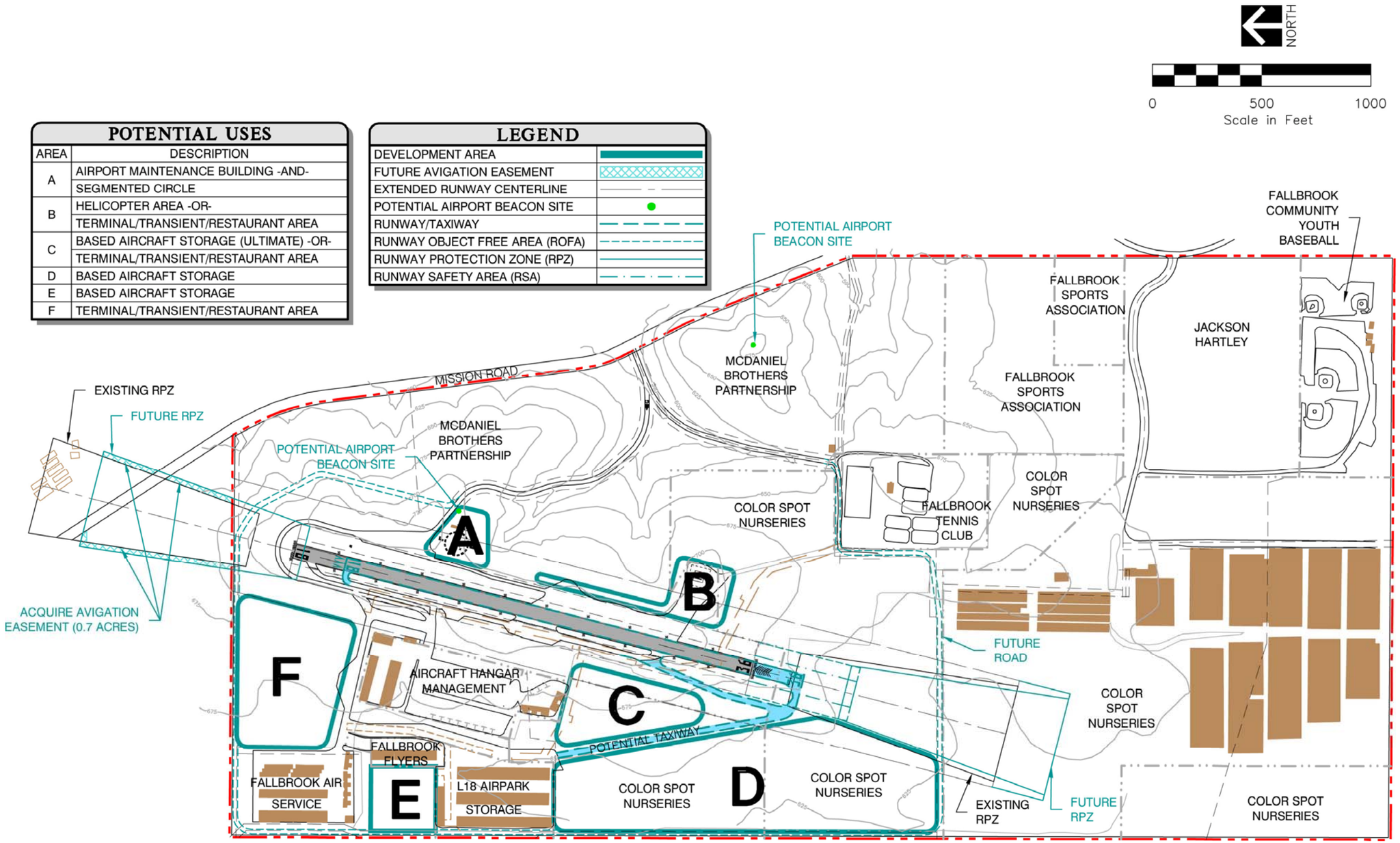


Figure 6-3
Potential Areas of Aviation Development

- **Development Area B.** Area B presently is the transient ramp for the airport. Potential uses for this area include a terminal and associated transient ramp along with the existing helicopter area. Ground access to a terminal area in this location may be somewhat easier to provide at this site than other potential sites on the west side of the airport as an existing dirt road is in place that connects to the tennis court area (per the ALP dated July 7, 1998 and used for base mapping purposes). The existing transient ramp is approximately the same elevation as the runway and has significant drop offs to the north, east, and south. This area presently serves as a helicopter area. This location minimizes mixing helicopters with fixed-wing aircraft.

- **Development Area C.** This area is located to the south of an existing leasehold (Aircraft Hangar Management), who provides fuel and has proposed to construct hangars. This area is bordered by the runway to the east and the proposed diagonal taxiway to the south and west and is designated as aviation land use in the MUP. Ground access to this site is difficult as it involves taxiway crossing. There is also a significant terrain issue with this site as there is approximately a 25-foot grade difference from east to west. It is assumed this area can be graded to match the new diagonal taxiway, match the new development of Aircraft Hangar Management, or a combination of the two. It is noted that dirt cut from Area C can be used as fill for the runway translation. This area could be utilized as based aircraft storage and possibly could be an extension to existing leasehold facilities. Alternatively, this site is a potential location for a terminal and corresponding transient ramp. In terms of based aircraft storage, this is envisioned as a long-term use, since as seen below, it is believed short-term development of based aircraft storage facilities along the west airport boundary is preferred.

- **Development Area D.** This area is located south of an existing leasehold (L18 Airpark Storage, Inc.) and west of the proposed diagonal taxiway and extends to the southerly edge of aviation land uses as contained in the MUP. Since development of other based aircraft storage facilities is occurring on the west side of the airport, it is logical this use should extend into this area. The area has relatively gradual slopes. This area can accommodate the additional hangars required and the balance of based aircraft tie-downs required in the long term. In addition, the present access taxiway to L18 Aircraft Storage, Inc. leasehold may be extended for access to additional storage facilities prior to the construction of the proposed diagonal taxiway.

- **Development Area E.** Area E is south of an existing leasehold (Fallbrook Air Service Inc.), north of L18 Aircraft Storage, and west of Fallbrook Flyers. Recently L18 Aircraft Storage, Inc. expressed interest in this area for tie-downs. This area is relatively flat and will be graded to match the existing development of Fallbrook Air Service to the north and hangar development to the south. The MUP identifies this area as aviation use and it is assumed to be used for based aircraft tie-downs in the recommended concept.

- **Development Area F.** The final development area noted, Area F, is north of the east/west taxiway that connects Taxiway A and Fallbrook Air Service, west of the runway, east of Fallbrook Air Service, and south of the airport boundary. This area is designated as aviation use by the MUP and has some terrain issues along the north and east edges. This area can accommodate a terminal and the associated transient ramp and/or based aircraft facilities. It is noted the airfield assessment indicates this area could be utilized for a circuitous taxiway to address the current longitudinal taxiway grades for the taxiway serving Fallbrook Air Service. Some development of landside facilities in Area F would still be possible with a realigned taxiway.

Access

Fallbrook Community Airpark is accessed via Air Park Road, on the east side of the airport, where it intersects with Mission Road. Air Park Road provides access to the administration building, view parking, and FBOs. Accessing the FBOs

requires automobiles to drive on taxiways. The MUP stipulates a road should be constructed for access to development at the airport. This road alignment should avoid crossing of the airfield (taxiways) to minimize mixing of automobile and aircraft traffic. The MUP also includes a new access road (right-turn-in/right-turn-out only) to the north of the airport. This alignment requires exercising right-of-way easements already granted to the County in an area that is zoned as residential. As an alternative, the County may investigate an alignment along the northern boundary line of the airport, on the airport property. This would eliminate the need to acquire right-of-way easements and provide a second access point as specified in the MUP.

The proposed road begins east of the existing administration building. The road travels parallel with the runway to a point approximately abeam the existing end of Runway 18. From this point, the road travels in a west/northwest direction to the northern airport boundary. The road then parallels the northern boundary and continues to the south, adjacent to and paralleling the western boundary line. The road turns to the east along the southern limit of the area designated as aviation use in the MUP. This alignment is roughly perpendicular to the Tennis Club and requires the road to parallel the western and northern sides of the Tennis Club leasehold, thereby allowing it to connect with the existing road, which serves the Tennis Club. Access to the existing helicopter area is also provided from near the tennis club. It is noted the road serving the Tennis Club is in poor condition. The proposed road alignment can be seen in Figure 6-3 and provides access to the existing and proposed developments from the north and west. While taxiways will not be used as roads, some taxiway crossing is required for vehicles to access the present Aircraft Hangar Management leasehold and development Area C (Potential Aviation Use). Appropriate safety and signage should be developed where cars and aircraft might mix. The proposed road alignment follows, for the most part, existing utility easements on the airport. Security fencing is recommended and is envisioned to be generally located adjacent to the road provided in this concept.

Based Aircraft Facilities

As noted above, the recommended development concept includes seven additional hangars and 80 tie-downs to accommodate requirements for the year 2025. The mix of hangars and tie-downs may vary depending on actual demand. To accommodate the based aircraft population contained in the MUP, 87 additional hangars and 28 additional tie-downs are necessary in addition to those required in 2025. The recommended development concept locates 26 based aircraft tie-downs and seven T-hangars north of the taxiway connecting Fallbrook Air Service to Runway 18. As previously noted, development at the airport has been occurring on the west side and it seems logical to continue this pattern. As such, the majority of the proposed based aircraft development is located along the western airport boundary. Based aircraft tie-downs (23) are provided north of L18 Airpark Storage's leasehold and can be accessed via a stub taxiway connecting the parcel with Fallbrook Flyers' public use taxiway. The remaining development along the western airport boundary is terraced into three tiers, with a separation of 50 feet between tiers. Terracing of development will minimize grading costs and can be constructed in phases as demand develops. The northern-most tier includes 34 tie-downs, three of which are beyond the year 2025 requirement. The remaining tiers accommodate the based aircraft population contained in the MUP by providing 28 tie-downs and 87 hangars.

Terminal Area Facilities

The airport does not have a terminal or a restaurant, and the existing administration offices are located in a trailer on the east side of the airport. The recommended development concept provides a 2,600 square foot general aviation terminal/restaurant/administration building, which can be expanded to 3,100 square feet to accommodate the based aircraft population specified in the MUP. The general aviation terminal is located west of Runway 18 and north of the taxiway connecting Fallbrook Air Service with the runway. A transient ramp is located to the south of the terminal and can accommodate a total of 23 aircraft, of which 18 satisfy year 2025 requirements. North of the terminal is automobile

parking (82 spaces). It is noted, should demand develop for additional transient parking, the based aircraft tie-down apron to the west could be utilized as there is room elsewhere on the airport for based aircraft tie-downs

Other Facilities

Presently no space is allotted for airport maintenance. The recommended development concept provides a 2,500 square foot building where the existing administration building is located. This maintenance building will be used for storage of airport supplies, maintenance equipment, and a small workshop area.
An aircraft maintenance building is also provided. The 5,000 square foot building has been located south of an existing leasehold (L18 Airpark Storage, Inc.) and has an apron area of approximately 100 feet by 140 feet.

As it was noted in Chapter 3, the present electric vault should be upgraded. The recommended development concept provides a new vault near the existing segmented circle. Alternately, the vault can be upgraded in its present location.

Recommendations

Figure 6-4 presents the recommended development concept. Key points of this concept are listed below.

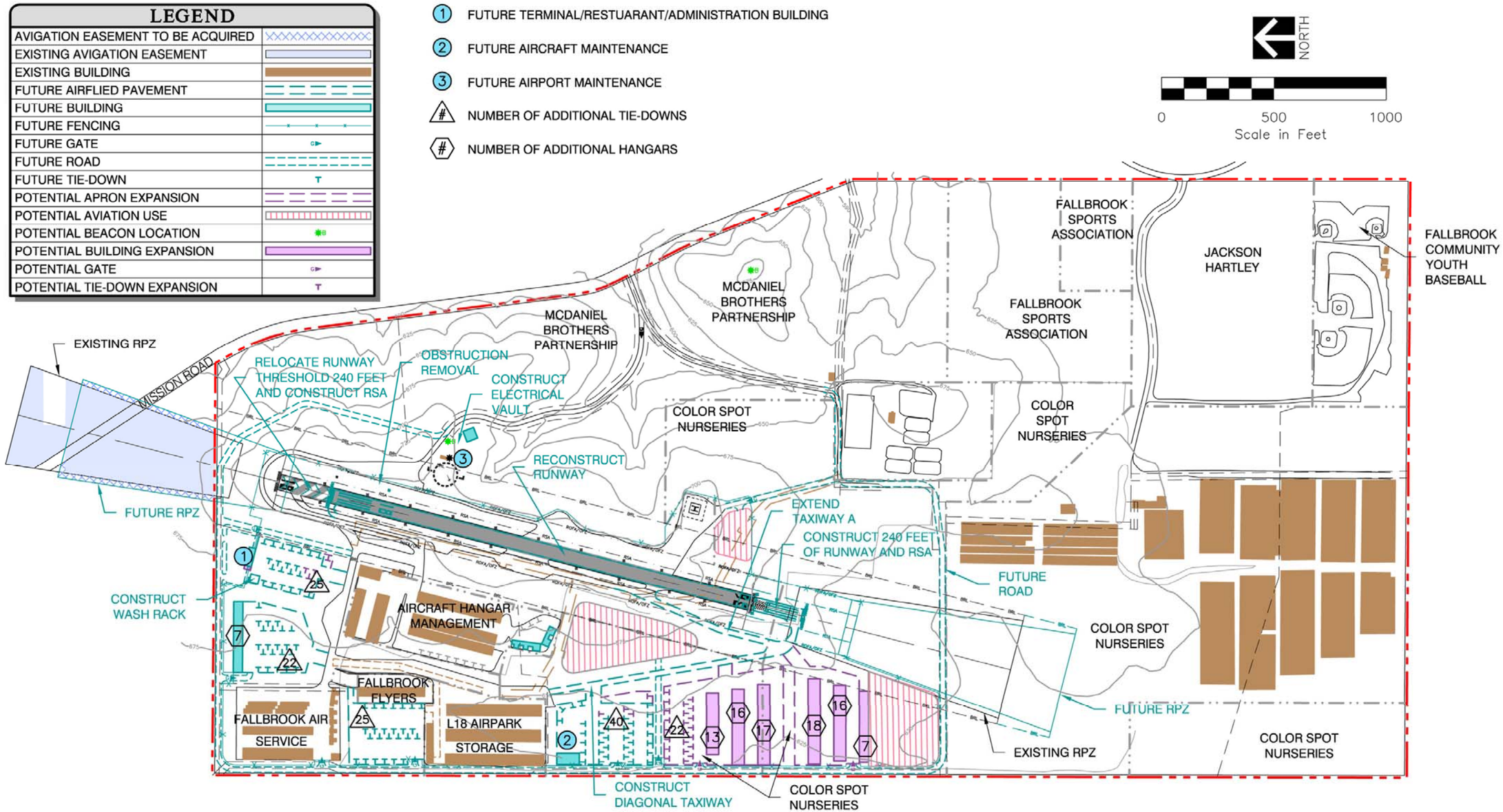
Airfield

- Obstruction removal in viewing area.
- Construct 240 feet of runway on the south end, including runway safety area.
- Relocate north runway threshold 240 feet to the south and construct runway safety area.
- Extend Taxiway A.
- Construct diagonal taxiway.
- Construct runway overlay.
- Acquire avigation easements.

Landside

The following represents facilities needed to accommodate the forecast demand for 2025 (230 based aircraft). They assume that development proposals by Aircraft Hangar Management is constructed.

- Construct seven T-hangars.
- Construct 80 based aircraft tie-downs and associated apron area.
- Construct 2,600 square foot general aviation terminal/restaurant/administration building and the associated transient ramp (18 tie-downs).
- Construct wash rack
- Construct 5,000 square foot aircraft maintenance building and associated apron area.
- Construct airport maintenance building (2,500 square feet).
- Construct road.
- Construct electric vault.



Note: The development proposal for Aircraft Hangar Management is assumed to be constructed. Therefore, it is depicted as existing facilities on this figure.

Figure 6-4
Proposed Development Concept

The recommended concept also will accommodate the based aircraft population set forth in the MUP (300 based aircraft). The following lists facilities that can be provided in addition to the 2025 requirements.

- An additional 87 T-hangars.
- Additional based aircraft tie-downs (28).
- Five hundred additional square feet of terminal building area.
- Five additional transient tie-downs.

This recommended development concept serves as the basis for the Airport Layout Plan and completion of the master plan.

AIRPORT PLANS

It should be noted, many development recommendations contained in this report and indicated on airport plans are based upon projected traffic levels and attainment of these levels. It cannot be over-emphasized where development is recommended based upon demand or traffic levels (such as hangars), it is ***actual***, not forecast, demand which dictates the timing of construction. However, for planning purposes, a schedule must be provided and this schedule is based upon the forecasts of traffic presented in Chapter 4.

It is also important to point out, the schedule of improvements proposed in this plan is contingent upon the availability of Federal, State, and local funds, and investment from the private sector. While improvements are scheduled for specific years in this report, it must be remembered that it is the programming of the Airport Improvement Program by the FAA, which will determine the timing of many projects. Development projects at Fallbrook Community Airpark must be reconciled with development priorities of other airports in the region and within the Sponsor County's system of airports. The implementation of projects will then depend on the availability of funds and FAA programming, as well as attainment of activity levels.

In addition to the ALP, four other drawings are included in the set of plans prepared as part of this master plan. These are the Airport Airspace Plan, Inner Portion RPZ Plan, On-Airport Land Use Plan, and Property Map "Exhibit A." Further detail on these plans is the subject of individual subsections in this chapter.

In terms of the Comprehensive Land Use Plan (CLUP), it is recognized the San Diego County Regional Airport Authority (SDCRAA) is the agency responsible for the preparation of CLUPs. Information generated from this master plan can be used to update the CLUP, and is therefore contained herein.

Role of the Airport

Before presenting the recommended development and airport plans, it is appropriate to briefly discuss the role of the airport. To begin, the airport is presently designated by FAA in the National Plan of Integrated Airport System (NPIAS) as a general aviation airport, which is defined as an airport that serves a community that does not receive scheduled commercial air service. The future role of Fallbrook Community Airpark is envisioned to continue in its present role as a general aviation airport. Expansion of the airport significantly beyond its present role is not practical from the standpoints of site constraints and the need to meet more stringent airport design standards, airspace (proximity to Camp Pendleton), and the airport location (with respect to its rural residential setting). The airport is capable of continuing in its current role.

The FAA in its current AC 150/5300-13, Airport Design, Change 9 dated 9/26/05, has developed an Airport Reference Code (ARC), which is a coding system that relates airport design and planning standards to two components: the operational and

physical characteristics of aircraft operating at an airport. The coding system was more fully explained in Chapter 5, and as previously stated; planning standards specified for an Airport Reference Code of A-I for small airplanes (less than 12,500 pounds maximum certificated takeoff weight) will be used in developing the ALP for Fallbrook Community Airpark. This type of facility will accommodate smaller general aviation aircraft with wingspans up to 49 feet and approach speeds less than 91 knots.

Airport Layout Plan

The Airport Layout Plan, Figure 6-5, delineates the overall development plan for Fallbrook Community Airpark as recommended in this master plan, and also indicates the phasing of the airport improvement strategy. The development phases used herein are as follows: the short-range or Phase 1 (1-5 years); the intermediate-range or Phase 2 (6-10 years); and, the long-range or Phase 3 planning period (11-20 years).

As a graphic overview of the recommended airport development, the ALP is supported by the other plans discussed in this chapter. The Airport Layout Plan conforms to guidelines set forth by the FAA for the preparation of this plan. The ALP is the principal plan depicting the recommended improvements and changes to the airport layout configuration and support areas. The recommended development program shown on the ALP is summarized below on a phase-by-phase basis.

Timing of these projects represents consideration of the following: 1) priority/demand for improvement; 2) completion of applicable environmental documentation/study; 3) assumed availability of FAA funding; and 4) recognization of County priorities. Therefore, the first project on the list is not necessarily the highest priority, rather the most likely to occur first.

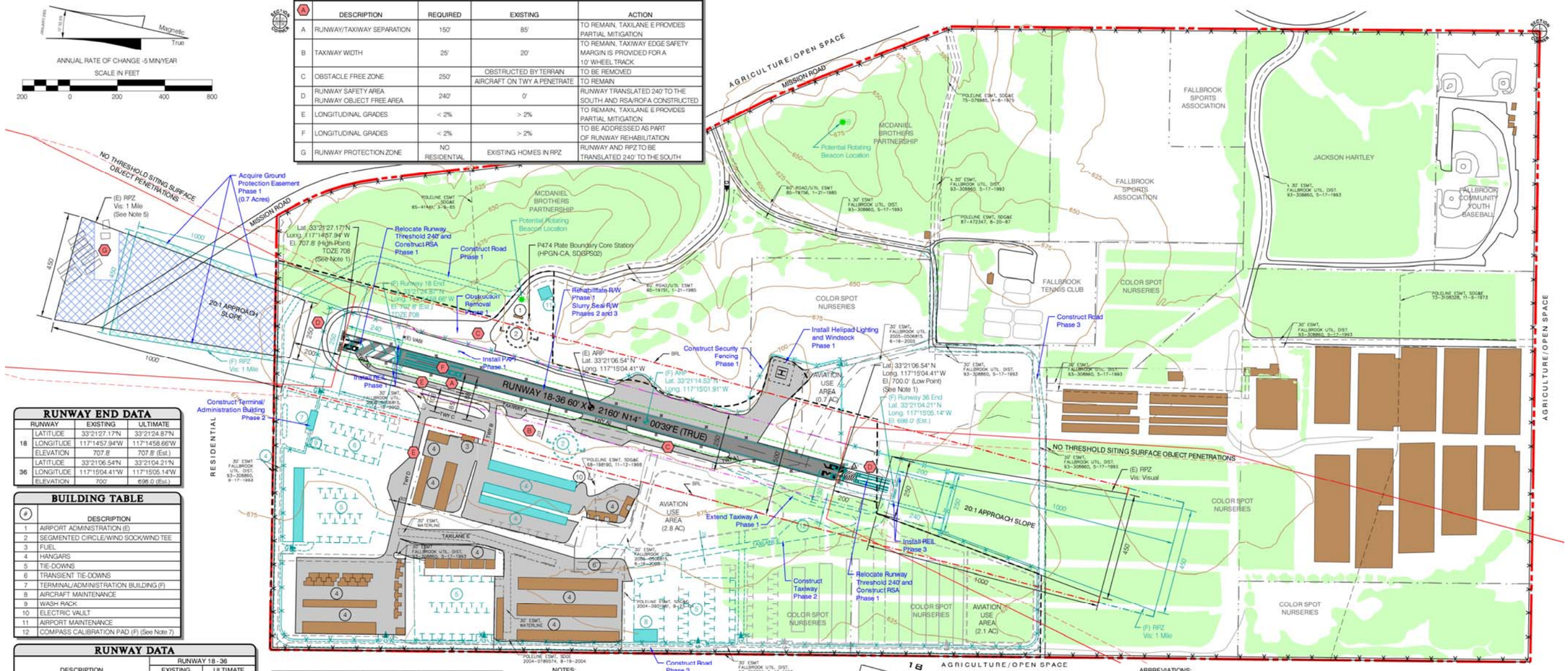
Phase 1 Development (2006- 2010)

Phase 1, or short-range, development at Fallbrook Community Airpark encompasses the first five-year period (2006-2010) of the overall plan. The improvements discussed below are considered to be of the highest priority in the total development plan, but are coordinated with the remainder of the plan and are supported by findings reached during previous portions of the study. The primary focus of Phase 1 improvements is enhancement of the runway safety areas and construction of based aircraft tie-down areas. The Phase 1 recommendations are outlined below.

Airfield Improvements

Construct Helipad Improvements (2006). Currently, helicopter operations are performed from a recently constructed helipad on the eastern portion of the transient ramp. Patterns have been established to minimize noise to the surrounding community based on this location. This project involves enhancing the helipad with the installation of lighting and windsock. The County should obtain access rights from Color Spot to utilize a dirt road for access to the helipad.

Obstruction Removal (Public Viewing Area) (2006). Objects (including terrain) which penetrate Federal Aviation Regulation Part 77 (FAR Part 77) surfaces are considered obstructions. The public viewing area, located along the northeastern portion of the runway, is a hill that penetrates two FAR Part 77 surfaces: the primary surface and transitional surfaces. It is recommended that the public viewing area and associated hill be removed to comply with FAR Part 77 surfaces and accommodate drainage accordingly. The earthwork required to lower the ground below Part 77 surfaces east of the runway is approximately 40,000 cubic yards. Dirt removed from this site can be used as fill for the runway translation project (see below). The obstruction removal project will require demolition/relocation of the existing segmented circle, wind cone, wind tee, and Super UNICOM. Details of the future location of the segmented circle and associated equipment are described below. In addition, the airport administration trailer will require temporary relocation.



DEVIATIONS FROM DESIGN STANDARDS

	DESCRIPTION	REQUIRED	EXISTING	ACTION
A	RUNWAY/TAXIWAY SEPARATION	150'	85'	TO REMAIN, TAXILANE E PROVIDES PARTIAL MITIGATION
B	TAXIWAY WIDTH	25'	20'	TO REMAIN, TAXIWAY EDGE SAFETY MARGIN IS PROVIDED FOR A 10' WHEEL TRACK
C	OBSTACLE FREE ZONE	250'	OBSTRUCTED BY TERRAIN AIRCRAFT ON TWY A PENETRATE	TO BE REMOVED TO REMAIN
D	RUNWAY SAFETY AREA RUNWAY OBJECT FREE AREA	240' 240'	0'	RUNWAY TRANSLATED 240' TO THE SOUTH AND RSA/ROFA CONSTRUCTED
E	LONGITUDINAL GRADES	< 2%	> 2%	TO REMAIN, TAXILANE E PROVIDES PARTIAL MITIGATION
F	LONGITUDINAL GRADES	< 2%	> 2%	TO BE ADDRESSED AS PART OF RUNWAY REHABILITATION
G	RUNWAY PROTECTION ZONE	NO RESIDENTIAL	EXISTING HOMES IN RPZ	RUNWAY AND RPZ TO BE TRANSLATED 240' TO THE SOUTH

RUNWAY END DATA

RUNWAY		EXISTING	ULTIMATE
18	LATITUDE	33°21'27.17"N	33°21'24.87"N
	LONGITUDE	117°14'57.94"W	117°14'58.66"W
	ELEVATION	707.8'	707.8' (Est.)
36	LATITUDE	33°21'06.54"N	33°21'04.21"N
	LONGITUDE	117°15'04.41"W	117°15'05.14"W
	ELEVATION	700'	698.0 (Est.)

BUILDING TABLE

#	DESCRIPTION
1	AIRPORT ADMINISTRATION (E)
2	SEGMENTED CIRCLE/WIND SOCK/WIND TEE
3	FUEL
4	HANGARS
5	TIE-DOWNS
6	TRANSIENT TIE-DOWNS
7	TERMINAL/ADMINISTRATION BUILDING (F)
8	AIRCRAFT MAINTENANCE
9	WASH RACK
10	ELECTRIC VAULT
11	AIRPORT MAINTENANCE
12	COMPASS CALIBRATION PAD (F) (See Note 7)

RUNWAY DATA

DESCRIPTION			RUNWAY 18 - 36 EXISTING	RUNWAY 18 - 36 ULTIMATE
EFFECTIVE GRADIENT (IN %)			.36	.45 (Est.)
MAXIMUM GRADIENT (IN %)			2.12 (Est.)	.77 (Est.)
WIND COVERAGE % (10.5 KNOTS)			98.96	SAME
APPROACH VISIBILITY MINIMUMS			1 MI (18)/V (36)	1 MILE
DESIGN AIRCRAFT	MAKE AND MODEL		SINGLE ENGINE	SAME
	WINGSPAN (Feet)		~49	SAME
	APPROACH SPEED (Kts.)		<91	SAME
	MAX. TAKEOFF WEIGHT (LBS)		8,000	SAME
RUNWAY MARKING			VISUAL	NON-PREC
APPROACH CATEGORY (FAR PART 77)			NON-PREC(18) VISUAL(36)	NON-PREC
RUNWAY ELEVATIONS	TOUCHDOWN ZONE (TDZ)		708'	708' (Est.)
	HIGH POINT		707.8'	707.8' (Est.)
	LOW POINT		700'	698.0' (Est.)
LINE OF SIGHT REQUIREMENT MET			YES	SAME
RUNWAY LENGTH			2,160'	SAME
RUNWAY WIDTH			60'	SAME
RUNWAY/TAXIWAY PAVEMENT MATERIAL			ASPHALT	SAME
APPROACH SLOPE			20:1	SAME
PAVEMENT STRENGTH (S/D) (000 LBS)			5.9/8.4	SAME
RUNWAY LIGHTING			MIRL	SAME
NAVIGATIONAL AIDS			BEACON	SAME
VISUAL AIDS			VASI (18)	SAME
RUNWAY SAFETY AREA		LENGTH[1]	240'	SAME
		WIDTH	120'	SAME
RUNWAY OBJECT FREE AREA		LENGTH[1]	240'	SAME
		WIDTH	250'	SAME
OBSTACLE FREE ZONE		LENGTH[1]	200'	SAME
		WIDTH	250'	SAME
RUNWAY CENTERLINE TO HOLDLINE			57'	SAME

[1] LENGTH BEYOND STOP END OF THE RUNWAY

AIRPORT DATA

DESCRIPTION		EXISTING	ULTIMATE
AIRPORT ELEVATION (MSL)		708'	SAME
AIRPORT REFERENCE POINT	LATITUDE	33°21'06.54"N	33°21'14.53"N
(ARP) COORDINATES	LONGITUDE	117°15'04.41"W	117°15'01.91"W
NAVAIDS (ILS, BEACON, ALS)		BEACON	SAME
MEAN MAX. TEMP. OF HOTTEST MONTH		83.7° AUGUST	SAME
AIRPORT REFERENCE CODE		A-I (SMALL)	SAME
GPS AT AIRPORT		YES	SAME

LEGEND

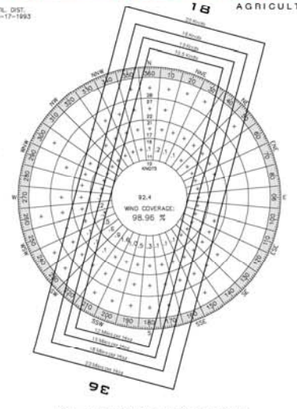
DESCRIPTION	EXISTING	ULTIMATE
SECTION CORNER		SAME
AIRPORT BOUNDARY		SAME
AIRFIELD PAVEMENT		
BUILDING RESTRICTION LINE (BRL)		
RUNWAY OBJECT FREE AREA (ROFA) / OBSTACLE FREE ZONE (OFZ)		
RUNWAY SAFETY AREA (RSA)		
BUILDINGS (See Note 6)		
FENCE		
GROUND CONTOURS	995'	SAME
AIRPORT REFERENCE POINT (ARP)		
RUNWAY PROTECTION ZONE EASEMENT		
THRESHOLD SITING SURFACE		
RUNWAY LIGHTS		
SURVEY MONUMENT		
AVIATION USE BOUNDARY LINE		
AGRICULTURAL AREA		SAME

FAA APPROVAL

Approved
FEDERAL AVIATION ADMINISTRATION
Western-Pacific Region
By _____
for Supervisor, Standards Section

NOTES:

1. Existing runway coordinates are based on information obtained from the San Diego County GIS.
2. All coordinates are in California Coordinate System Zone 6 NAD 83.
3. All elevations are in North American Vertical Datum 1988.
4. Monument 1 is protected by asphalt.
5. Existing residences located within the Runway 18 RPZ will not be within the future RPZ (after the runway is translated 240 feet to the south).
6. Ultimate facilities needed to accommodate the maximum number of based aircraft specified in the Major Use Permit are depicted in gray.
7. Final location of the Compass Calibration Pad should be located at least 300 feet from power and communication cables and other aircraft, and at least 600 feet from large magnetic objects, such as buildings. A thorough magnetic survey of the proposed site should be performed prior to construction. For more information refer to AC 150/5300-13, Appendix 4.



ALL WEATHER WIND ROSE

ABBREVIATIONS:

ARP	Airport Reference Point
BRL	Building Restriction Line
(E)	Existing
El.	Elevation
Est.	Estimate
(F)	Future
Kts.	Knots
Lat.	Latitude
Long.	Longitude
MSL	Mean Sea Level
MIRL	Medium Intensity Runway Edge Lights
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
REIL	Runway End Identifier Lights
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
TWY	Taxiway
TDZE	Touch Down Zone Elevation
Vis.	Visibility
VASI	Visual Approach Slope Indicator

CROSSWIND COVERAGE

RUNWAY	10.5	13	16	20
18	75.95%	76.49%	76.77%	76.83%
36	55.58%	55.64%	55.68%	55.70%
18-36	98.96%	99.56%	99.89%	99.97%

Based on 81,456 observations between 1990 through 1999 taken at Camp Pendleton.

RECOMMENDED BY: _____ DATE 1/18/06
WILTON HOOPER, AIRPORT MANAGER
_____ DATE 1/18/06
ERIC WELSH, AIRPORT ENGINEER

APPROVED BY: _____ DATE 1/19/06
PETER DRINKWATER, DEPUTY DIRECTOR

The preparation of this plan was financed in part through a planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the

This is a reduced version of a large size drawing.

Figure 6-5
Airport Layout Plan

Replace Segmented Circle (2006). A segmented circle is a visual aid for pilots that identify traffic patterns for each runway at an airport (in this case one) and will typically include a wind cone, which indicates wind direction and speed. Fallbrook Community Airpark also has a wind tee, which indicates wind direction and equipment for the located within the segmented circle. The obstruction removal project (described above) will require the existing segmented circle, constructed of old painted tires, to be removed. A proposed segmented circle is located approximately 190 feet west of the runway and roughly 1,020 feet south of the existing end of Runway 18. The wind cone, wind tee, and Super UNICOM can be relocated from the existing location. However, it is proposed the new segmented circle be constructed of painted concrete.

Construct Transient Ramp and Taxiway (2007). The existing transient ramp and associated taxiway are in poor condition, essentially being of gravel construction. This project paves these areas.

Reconstruct Taxiway Connector Between Taxiway A and Aircraft Hangar Management (Taxiway B) (2007). The Pavement Management Program for Fallbrook Community Airpark recommends the pavement for this taxiway be reconstructed.

Translate Runway 240 Feet South (2008). As noted previously, one of the most critical safety areas at an airport is the Runway Safety Area, or RSA. The RSA is the one standard that FAA will not permit deviations. FAA design standards state the RSA for Fallbrook should be 120 feet wide and extend 240 feet beyond the runway ends. To address the current deviations of the RSA, it is recommended the runway be translated 240 feet to the south. The northern 240 feet of existing pavement is to be left in place, to create a partially paved runway safety area. It is should be noted that, the northern 240 feet of pavement is not available for takeoffs or landings. As such, a new entrance taxiway should be constructed to connect Taxiway A with the new Runway 18 end. The runway translation will require adding 240 feet of runway pavement to the south and construction of the RSA. This will require approximately 90,000 cubic yards of fill. Approximately 40,000 cubic yards of fill will be generated from the obstruction removal project described above. The RSA extends 240 feet beyond the runway end and will be graded downwards at a 5 percent slope. Access to Runway 36 end will be provided by extending Taxiway A at a standard runway/taxiway centerline separation of 150 feet. The new portion of Taxiway A will include an angled portion to join with the existing Taxiway A which has a non-standard centerline-to-centerline separation of 85 feet. Existing portions of the translated runway and Taxiway A will receive pavement rehabilitation. Taxiway and runway lights will be relocated and constructed as needed. The timing of this project will need to be reconciled with other priorities of the County Airport System.

Runway 18 is equipped with a unique type of Visual Approach Slope Indicator (VASI) system based on alternating red and white lights. The FAA recommends Precision Approach Path Indicators (PAPIs) be installed as the visual glide path aid at airports under Airport Improvement Program funding grants. VASIs and PAPIs provide vertical visual glide path information to approaching pilots. Therefore, the runway translation project includes upgrading of the existing VASI to a PAPI. The location of the PAPI will be adjusted to coincide with the new runway end location.

Runway End Identifier Lights (REILs) should also be installed for Runway 18. These lights provide rapid and positive identification of the approach end of a runway and consist of two synchronized flashing lights located on each side of the runway threshold.

It is important to note that the runway translation does not change the length of the runway. Upon completion of this project, the runway will be 2,160 feet long, which is the same as the existing length.

Acquire Runway Protection Zone Easements (2008). Existing clear zone easement with ground protection should be extended to include portions of the translated Runway Protection Zone area not covered by easements. This project acquires the needed 0.7 acres, which are outside the existing easement area. The purpose of this project is to further enhance airfield safety and operations.

Construct 2 Inch Overlay on the East/West Taxiway and Install Taxiway Lights (Taxiway C) (2008). The Pavement Management Program also identified the east/west taxiway be given a two inch overlay during the first phase of the master plan. The east/west taxiway currently features taxiway edge reflectors. It is recommended that taxiway edge lights be installed.

Install Airfield Signage (2009). Airfield signage will include runway hold position signs. This project requires conventional names to be given to the taxiways at the Airport. Figure 6-6 depicts the proposed and existing taxiway designations.

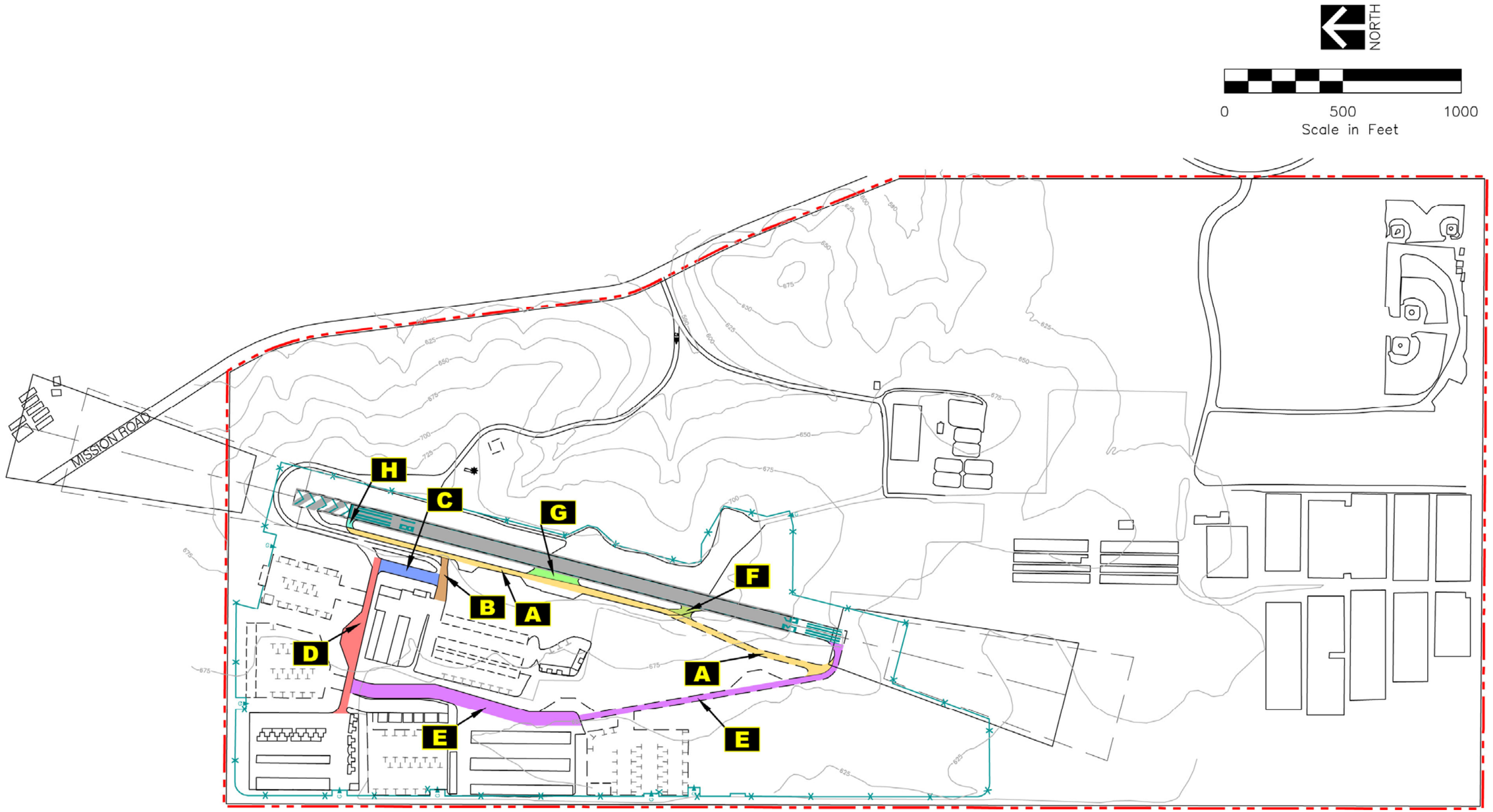
Relocate Rotating Beacon (2010). The rotating beacon assists pilots in finding the airport at night. Presently, the rotating beacon is located on top of the administration building and is occasionally obscured by surrounding terrain and trees. It is recommended that the beacon be relocated to a hilltop on airport property. Two locations have been identified. One is in an avocado grove east of the transient ramp. This site would require the County to compensate the lessee for the trees removed and obtain access rights from the tenant. The other location is east of the administration building. Both locations require construction of a beacon tower to ensure the beacon is visible above the surrounding terrain and trees. The FAA will determine the final location of the rotating beacon.

Slurry Seal Runway 18-36 and Taxiway A (2010). The Pavement Management Program recommends airfield pavements be maintained by the application of a slurry seal every four years. This project involves application of slurry seals to the runway and Taxiway A. These pavements are proposed for construction or reconstruction in 2006 in the master plan.

Modification of Airport Design Standards

FAA Advisory Circular 150/5300-13 defines "modification to standards" as a change to FAA design standards other than dimensional standards for runway safety areas. A request for modification should show the modification will provide an acceptable level of safety, economy, durability, and workmanship. Several existing deviations from FAA design standards are present at Fallbrook Community Airpark, including runway safety area, runway-taxiway separation, obstacle free zone, runway object free area, runway longitudinal grades, and taxiway longitudinal and traverse grades.

Runway Safety Areas (RSA). Deviations from FAA standards with respect to the RSA involves the runway safety area beyond the runway ends. Currently terrain off the runway ends exceeds the 5 percent maximum slope allowed. In order to meet this standard, the runway will be translated 240 feet to the south. The translation will provide a partially paved RSA north of Runway 18 and require construction of the RSA associated with the Runway 36 end. The public viewing area, near the end of Runway 18 also violates RSA design standards. This hill should be removed as part of the obstruction removal project.



Note: Colors of taxiways depict the extent of designated taxiways

Figure 6-6
Proposed Taxiway Designations

Runway-Centerline-to-Taxiway-Centerline Separation. The current separation between the Runway 18-36 and Taxiway A is 85 feet. The standard runway-taxiway separation is 150 feet. The separation standard for runway centerline to parallel taxiway centerline separation is intended to satisfy the requirement that no part of an aircraft (tail tip or wing tip) on a taxiway centerline is within the runway safety area or runway obstacle free zone (OFZ). The OFZ for Fallbrook Community Airpark is 250 feet wide and Taxiway A is contained within the OFZ. Increasing the separation between the runway and Taxiway A is not deemed practicable and the master plan does not recommend relocating Taxiway A. However, the extended portion of Taxiway A may be constructed at a standard separation. It is noted, airplanes on Taxiway A do not penetrate the runway safety area.

Runway Obstacle Free Zone (OFZ). As explained above, the OFZ contains all of Taxiway A. Airplanes taxiing on Taxiway A are within the OFZ. The public viewing area is situated on a hill, which also penetrates the OFZ. As noted above, increasing the separation of the runway-taxiway is not feasible and the public viewing area will be lowered as part of the obstruction removal project.

Runway Object Free Area (ROFA). At Fallbrook Community Airpark, the ROFA is the same width as the OFZ. Therefore, the public viewing area and Taxiway A are also within the ROFA.

Runway Longitudinal Grades. The airfield assessment identified a bump in the runway approximately 800 feet south of the Runway 18 end. This deficiency will be corrected through a runway rehabilitation project.

Taxiway Longitudinal Grades. Many deviations from FAA standards exist at Fallbrook Community Airpark with respect to longitudinal grades. The east/west taxiway and Taxiway A deviate from FAA longitudinal grade standards. These deviations are not deemed practical to correct and will remain; however, partial mitigation is provided in Phase 2 by the construction of a diagonal taxiway (Taxiway E). This taxiway will reduce the number of aircraft using Taxiway A.

Landside Improvements

As noted previously, the majority of airport property is designated as non-aviation uses by the Major Use Permit. Therefore, development of landside facilities is confined to the northwestern portion of the airport. The master plan continues the recent trend of based aircraft facilities along the western edge of airport property.

It should be noted, the layout of hangars and tie-downs does not imply a design or mandatory configuration, but rather is a concept, which depicts the potential build-out of a parcel and the feasibility of accommodating the forecast a number of aircraft. The ultimate layout of facilities may differ from the concept; however, in developing the airport it is important the County maintain consistent development standards to prevent haphazard development of the property, while maintaining minimum safety and security standards. The capacity of future based aircraft storage facilities should accommodate the requirements contained in Chapter 5 and ultimately the maximum number of aircraft permitted by the Major Use Permit.

Design and Construct Security Fencing (2006). While the airport perimeter is fenced, the airfield is not secure. Currently the public using the viewing area, as well as workers in non-aviation use areas, can

easily access the airfield. The airfield should be secured by a fence, which separates the aviation and non-aviation use areas. This project secures the airfield from the public and non-aviation uses with a 6-foot tall chain link fence.

Construct Road from Mission Road to L18 Airpark Storage, Inc. (2009). Current access routes to based aircraft and Fixed Base Operators (FBOs) include vehicles driving on active taxiways. Therefore, the master plan proposes a two-lane road to re-route the majority of vehicular traffic. Construction of the road will require modification of the security fence proposed in 2006 and construction of new fence and gates to maintain a secure airfield. It is noted that vehicles will still be required to cross the east/west taxiway to access Aircraft Hangar Management. Portions of the road require significant grading, specifically along the western edge of the airport property and northeast of the runway. In addition, a reclaimed water line runs parallel to the western airport boundary. This reclaimed water line is near the surface and must be relocated to accommodate the road. Along the western boundary, a retaining wall (approximately 10 feet high) is required to accommodate the road.

Construct 47 Based Aircraft Tie-Downs (2010). Approximately 47 based aircraft tie-downs are required to be developed in Phase 1. Tie-down development in this phase is proposed to occur in two locations: north of the east/west taxiway (Taxiway D) and south of Fallbrook Air Service. The northern and southern sites will accommodate approximately 22 and 25 tie-downs, respectively. Construction of the tie-downs is contingent upon demand and funding. Access to the northern apron will be provided by an extension of the road proposed in 2009. Access to the southern apron will be provided by the road proposed in 2009.

Utilities

Upgrade Electric Vault (2008). The existing electric vault is in poor condition and provides little protection for the electronic components contained within. This project will upgrade the existing or construct a new vault in the same location.

Other Action Items

Conduct Drainage Master Plan Study (2007). Due to the terrain present at the airport, it is important the airport plan how to direct and contain runoff. This study will develop a drainage plan for the airport. The study should include digital topographic mapping.

Phase 2 Development (2011- 2015)

Medium range development, covering the period 2011 to 2015 is depicted on the ALP as Phase 2. Phase 1 development focused on immediate airfield improvements and continuing the based aircraft development trend at the airport. Phase 2 developments address additional airfield improvements, a continuation of based aircraft development, and the construction of a general aviation terminal/airport administration building.

Airfield Improvements

Construct Diagonal Taxiway and Install Taxiway Edge Lights (2011). As a means to further eliminate potential head-to-head encounters on the east/west taxiway (Taxiway D), it is recommended that a diagonal taxiway be constructed. This taxiway connects the future end of Runway 36 with the based

aircraft storage facilities on the west side of the airport (L18 Airpark Storage, Inc.). The taxiway will be 25 feet wide, lighted, and will serve future based aircraft development at the airport. In addition, this taxiway will eliminate some traffic on the portion of Taxiway A with non-standard runway-taxiway separation.

Slurry Seal Pavements Constructed in 2007 (2011). The Pavement Management Program recommends airfield pavements be maintained by the application of a slurry seal every four years. This project slurry seals Taxiway B (taxiway connector between Taxiway A and Aircraft Hangar Management) and the transient ramp and associated taxiway.

Slurry Seal East/West Taxiway (2012). Since a pavement overlay is recommended for Taxiway D in 2008, a slurry seal is scheduled in this phase.

Slurry Seal Runway 18-36, Taxiway A, and 47 Based Aircraft Tie-Downs Constructed in 2010 (2014). As recommended by the Pavement Management Program, it is recommended that pavements be maintained by performing a slurry seal every four years.

Slurry Seal Taxiway Connector (Taxiway B), Diagonal Taxiway (Taxiway D), and Transient Ramp (2015). This project slurry seals pavement constructed or slurry sealed in 2011. It is noted the transient ramp refers to the new transient ramp proposed to be constructed in 2011.

Landside Improvements

Construct General Aviation Terminal/Airport Administration Building (2011). Phase 2 development also includes a general aviation (GA) terminal/airport administration building. The timing will be dependent on funding. There is no dedicated GA terminal space for pilots to perform flight-planning tasks, no dedicated FSS phone, and marginal bathroom facilities are available. The present airport administration building is a trailer. While the ultimate size will be defined during the design of the building, the master plan identifies a space for a 2,600 square foot GA terminal/airport administration building. The building will include space for general aviation pilots, airport administration offices, restrooms, and a restaurant, which will be open to the public. Due to the building's proposed location, a new transient ramp will also be constructed so transient airplanes can park near the GA terminal. The transient ramp will include approximately 13 tie-downs and a wash rack. The building is located north of the transient ramp to serve as a noise barrier. Approximately 22,600 square feet of vehicle parking is provided north of the GA terminal/airport administration building.

Construct 6 Based Aircraft Tie-Downs (2013). Following the recent pattern of based aircraft development at Fallbrook Community Airpark, based aircraft tie-downs are located along the western border of the airport. Six tie-downs for based aircraft and associated apron (52,500 square feet) are scheduled for this phase. The proposed location of this development is south of an existing leasehold (L18 Airpark Storage, Inc.) Access to this site will be provided by an extension of the road proposed for construction in Phase 1. A retaining wall and relocation of the reclaimed water line is necessary for this portion of road. This will require security fencing and gate modifications. This development is contingent upon demand and commitments from the private sector to develop facilities.

Construct Aircraft Maintenance Hangar (2014). Construction of a 5,000 square foot maintenance hangar and associated apron (2,500 square yards) is assumed in this phase but is contingent upon demand and commitments from the private sector to develop facilities. It is noted the ultimate size will be defined during

the design of the building. The maintenance hangar is for aircraft maintenance and is located on the western edge of airport property, south of an existing leasehold (L18 Airpark Storage, Inc.).

Phase 3 Development (2016- 2025)

Development recommended under Phase 3, or the long-term portion of the planning period, covers the period 2016 to 2025. As such, the improvements discussed below are considered to be of the lowest priority and implementation is recommended only if activity materializes or conditions warrant. Recommendations for Phase 3 development consist of the following projects.

Airfield Improvements

Slurry Seal Runway, Taxiway, and Apron Pavements (2016-2025). A slurry seal of all pavements is assumed to be required in the long-term at four year intervals. This includes the application of slurry seal and new pavement markings to the runway, taxiways, and aprons.

Install Runway End Identifier Lights (Runway 36) (Long-Term). It is recommended that Runway End Identifier Lights (REIL) be installed on Runway 36. These lights provide a rapid and positive identification of the approach end of a runway.

Landside Improvements

Construct Based Aircraft Storage Facilities (Long-Term). This project involves the development of approximately 7 T-hangars and 30 based aircraft tie-downs. The T-hangars are proposed north of the east/west taxiway (Taxiway D), on the northern portion of the based aircraft tie-down apron area. These hangars will also act as a noise barrier. Thirty based aircraft tie-downs are proposed south of an existing leasehold (L18 Airpark Storage, Inc.), continuing the development pattern at the airport. The timing of this development will be contingent on demand.

Construct 8 Transient Aircraft Tie-Downs (Long-Term). This project involves the development of additional transient tie-downs, should demand develop. The transient apron can be expanded to accommodate up to 25 tie-downs.

Construct Airport Maintenance Facility (Long-Term). Since there is no designated space at the airport for airport maintenance facilities, it is recommended that a 2,500 square building be constructed to accommodate airport maintenance functions. This is located east of the current administration building. It is noted the ultimate size will be defined during the design of the building.

Connect Road to Tennis Club Access Road (Long-Term). This project connects the road constructed on the western edge of the airport with the road serving the Tennis Club. The road will be a 24-foot wide two-lane road. It is noted, the access road to the Tennis Club is in poor condition. Portions of this road will require relocation of the reclaimed water line and construction of a retaining wall.

Improve Access Road to Helipad (Long-Term). The road connecting the Tennis Club to the helipad is unpaved. This project proposes to construct a two-lane, paved road.

Other Action Items

Develop GPS Approach Procedure (Runway 36) (Long-Term). Staff at the SOCAL TRACON has recommended the development of a GPS procedure for Runway 36 to reduce potential airspace interactions with instrument approaches to Munn Field (Camp Pendleton); therefore, the master plan recommends this be pursued. A non-precision instrument approach is envisioned as the procedure.

Phasing

The timing of recommended improvements depicted on the ALP and previously described are summarized in tabular form in Table 6-2. Specific years are indicated for improvements recommended in the first and second development phases, whereas improvements for Phase 3 are shown by phase.

Airport Airspace Plan

The Airport Airspace Plan, presented as Figure 6-7, depicts the imaginary surfaces on and around Fallbrook Community Airpark through which no object should penetrate without being properly marked. The dimensions and criteria employed in determining these surfaces, as discussed below, are those outlined in the Federal Aviation Regulations, Part 77 Objects Affecting Navigable Airspace (Part 77). The imaginary surfaces are based upon the ultimate runway configuration depicted on the Airport Layout Plan and therefore assumes a 240-foot translation of the runway to the south. Criteria for utility runways, having non-precision instrument approaches categorized in Part 77 have been applied.

Consistent with the ALP, it is assumed a non-precision instrument approach procedure to Runway 36 based on GPS technology is possible at some point in the future, and therefore the Airport Airspace Plan protects for this potential enhancement. Runway end and associated imaginary surface elevations are based on estimates developed by P&D Aviation for the new runway ends. The basis of the surfaces shown in Figure 6-7 is explained below.

The ***horizontal surface*** is a horizontal plane 150 feet above the established airport elevation, which in the case of Fallbrook Community Airpark, is 858 feet above mean sea level. The perimeter of the horizontal surface is delineated by arcs of radius 5,000 feet from the center of the primary surface of each end of Runway 18-36. Adjacent arcs are connected by lines that are tangent to these arcs. Radii of 5,000 feet are used since non-precision instrument approaches for utility runways are assumed.

The ***conical surface*** extends outward and upward from the edge of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet. Thus, the elevation of the conical surface at its outermost edge is 1,058 feet above mean sea level.

The ***primary surface*** is defined as being longitudinally centered on the runway for a width dependent on the type of runway and extending 200 feet beyond each end of the landing threshold. The applicable width for the primary surface at Fallbrook Community Airpark is 500 feet, as specified in Part 77.

The slope and configuration of the runway ***approach surfaces*** vary as a function of runway type, length, and availability of instrument approaches. At Fallbrook Community Airpark, approach surfaces extend 5,000 feet at a slope of 20:1. The inner width is the same as the primary surface width (500 feet) and it expands uniformly to a width of 2,000 feet at a point 5,200 feet from the runway end. The approach surface intersects the horizontal surface at 858 feet MSL. This is approximately 3,000 feet and 3,300 feet from Runway 18 and Runway 36 ends, respectively. Profile views of the approach surfaces are also shown on Figure 6-7.

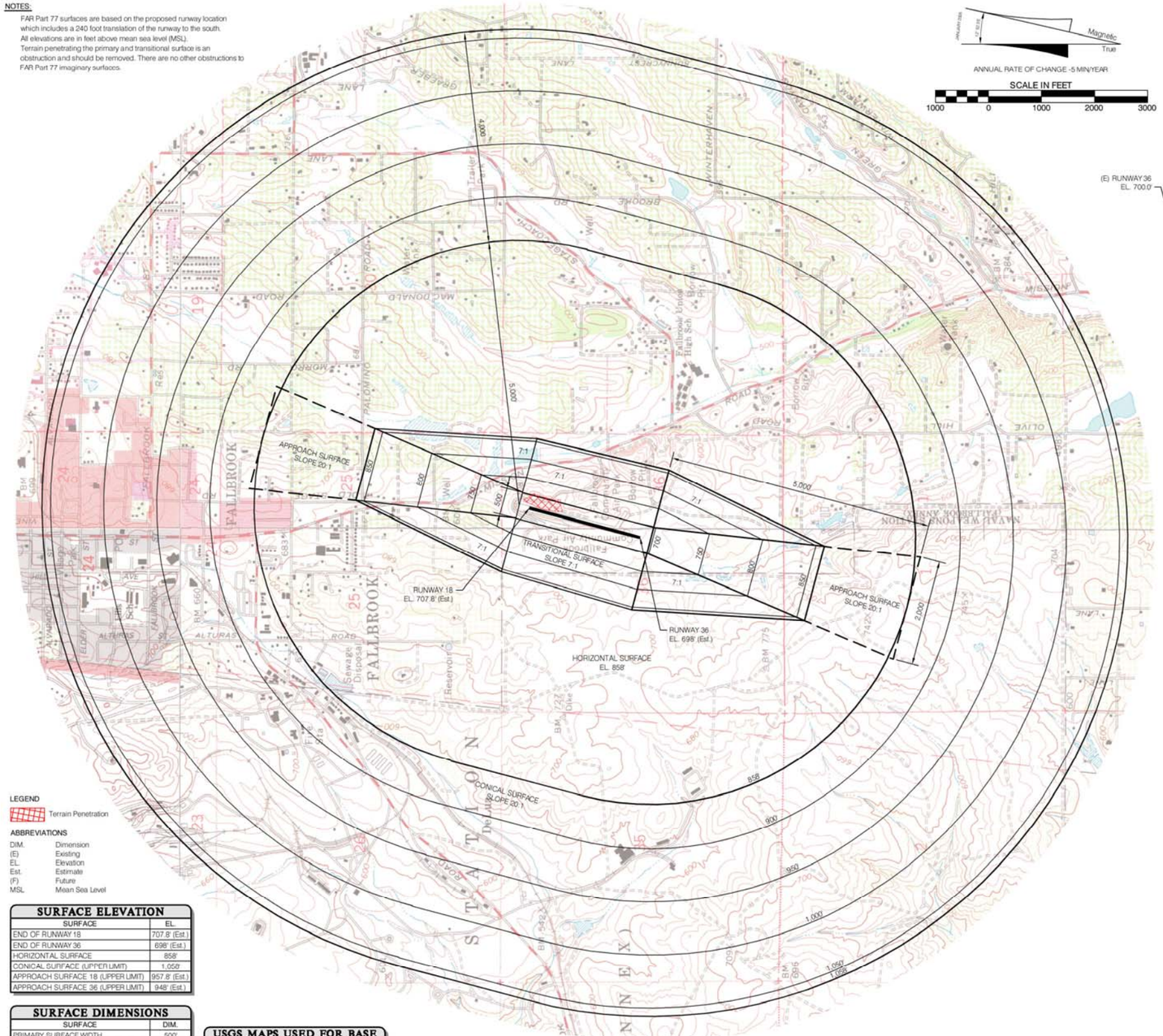
Table 6-2
SUMMARY OF RECOMMENDED IMPROVEMENTS

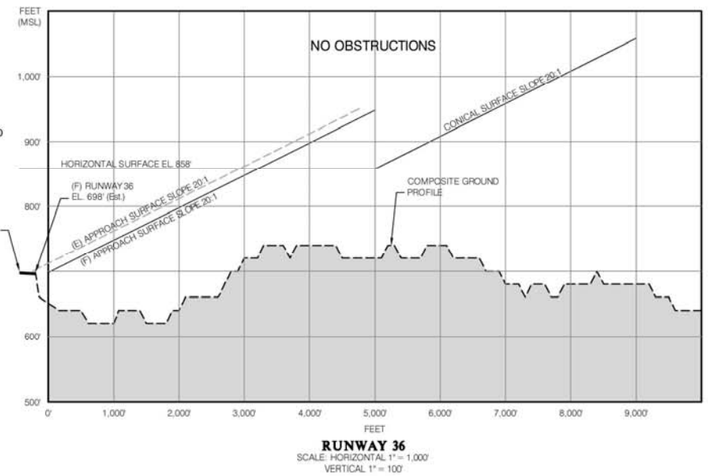
Project	Timing
Phase 1 (2006-2010)	
Construct Helipad Improvements (Lighting and Wind Sock)	2006
Obstruction Removal (Public Viewing Area)	2006
Replace Segmented Circle	2006
Design and Construct Security Fencing	2006
Construct Transient Ramp and Taxiway	2007
Reconstruct Taxiway Connector Between Taxiway A and Aircraft Hangar Management	2007
Conduct Drainage Master Plan Study	2007
Translate Runway 240 Feet South	2008
Acquire Runway Protection Zone Easements	2008
Upgrade Electrical Vault	2008
Construct 2 Inch Overlay on the East/West Taxiway and Install Taxiway Lights	2008
Install Airfield Signage	2009
Construct Road from Mission Road to L18 Airpark Storage, Inc.	2009
Relocate Rotating Beacon	2010
Slurry Seal Runway 18-36 and Taxiway A	2010
Construct 47 Based Aircraft Tie-Downs	2010
Phase 2 (2011-2015)	
Construct Diagonal Taxiway and Install Taxiway Edge Lights	2011
Slurry Seal Pavements Constructed in 2007	2011
Construct General Aviation Terminal/Airport Administration Building and Associated Improvements	2011
Slurry Seal East/West Taxiway	2012
Construct 6 Based Aircraft Tie-Downs	2013
Slurry Seal Runway 18-36, Taxiway A, and 47 Based Aircraft Tie-Downs Constructed in 2010	2014
Construct Aircraft Maintenance Hangar	2014
Slurry Seal Helipad Area, Taxiway Connector (Taxiway B), Diagonal Taxiway (Taxiway E), and Transient Ramp	2015
Phase 3 (2016-2025)	
Slurry Seal Runway, Taxiway and Apron Pavements	2016-2025
Install Runway End Identifier Lights (Runway 36)	Long-Term
Construct Based Aircraft Tie-Downs	Long-Term
Construct 7 Based Aircraft T-Hangars	Long-Term
Construct 8 Transient Tie-Downs	Long-Term
Construct Airport Maintenance Facility	Long-Term
Connect Road to Tennis Club Access Road	Long-Term
Improve Access Road to Helipad	Long-Term
Develop GPS Approach Procedure (Runway 36)	Long-Term

Source: P&D Aviation

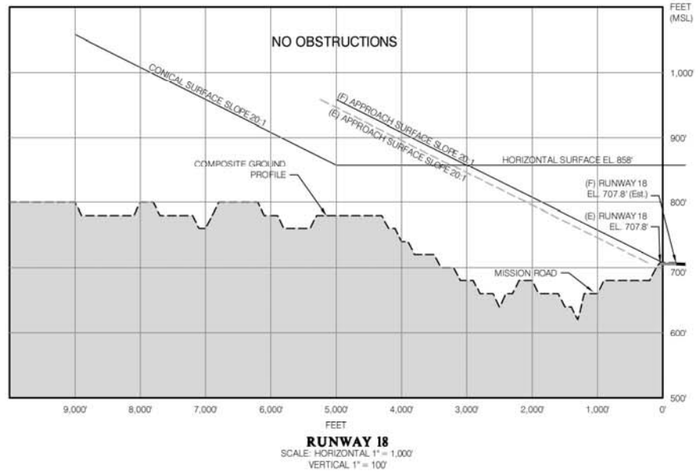
NOTES:

FAR Part 77 surfaces are based on the proposed runway location which includes a 240 foot translation of the runway to the south. All elevations are in feet above mean sea level (MSL). Terrain penetrating the primary and transitional surface is an obstruction and should be removed. There are no other obstructions to FAR Part 77 imaginary surfaces.





RUNWAY 36
SCALE: HORIZONTAL 1" = 1,000'
VERTICAL 1" = 100'



RUNWAY 18
SCALE: HORIZONTAL 1" = 1,000'
VERTICAL 1" = 100'

This is a reduced version of a large size drawing.

SURFACE ELEVATION

SURFACE	EL.
END OF RUNWAY 18	707.8' (Est.)
END OF RUNWAY 36	698' (Est.)
HORIZONTAL SURFACE	858'
CONICAL SURFACE (UPPER LIMIT)	1,058'
APPROACH SURFACE 18 (UPPER LIMIT)	957.8' (Est.)
APPROACH SURFACE 36 (UPPER LIMIT)	948' (Est.)

SURFACE DIMENSIONS

SURFACE	DIM.
PRIMARY SURFACE WIDTH	500'
APPROACH SURFACE 18 (LOWER LIMIT)	500'
APPROACH SURFACE 36 (LOWER LIMIT)	500'
APPROACH SURFACE 18 (UPPER LIMIT)	2,000'
APPROACH SURFACE 36 (UPPER LIMIT)	2,000'
CONICAL SURFACE (WIDTH)	4,000'

USGS MAPS USED FOR BASE

7.5 MIN. QUAD
BONSALL (1975)
FALLBROOK (1988)
MORRO HILL (1968)
TEMECULA (1975)

The preparation of this plan was financed in part through a planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the

Figure 6-7
Airport Airspace Plan

The ***transitional surfaces*** extend outward and upward at right angles to the runway centerline (and runway centerline extended) at a slope of 7:1 from the edges of the primary and approach surfaces.

Presently there is one obstruction at Fallbrook Community Airpark. This is a terrain penetration, which penetrates the primary, and transitional surfaces. This area is on airport property and is generally defined as the public viewing area. The terrain penetration should be removed through an obstruction removal project.

A major consideration in the regulation of off-airport land use is the height of tall structures in relation to the approach and departure surfaces for the runways, particularly the innermost portions of the surfaces, or those that are nearest the runways and contained within the Runway Protection Zones. The absence of appropriate controls can lead to the establishment of tall structures such as antennae, smoke stacks, etc. which are penetrations to the avigational surfaces described in FAR Part 77.

In order to control the future construction of obstacles which may hamper the safe operation of aircraft operating at Fallbrook Community Airpark, it is recommended this Airport Airspace Plan be incorporated in the County Land Use Plan for the area surrounding the airport.

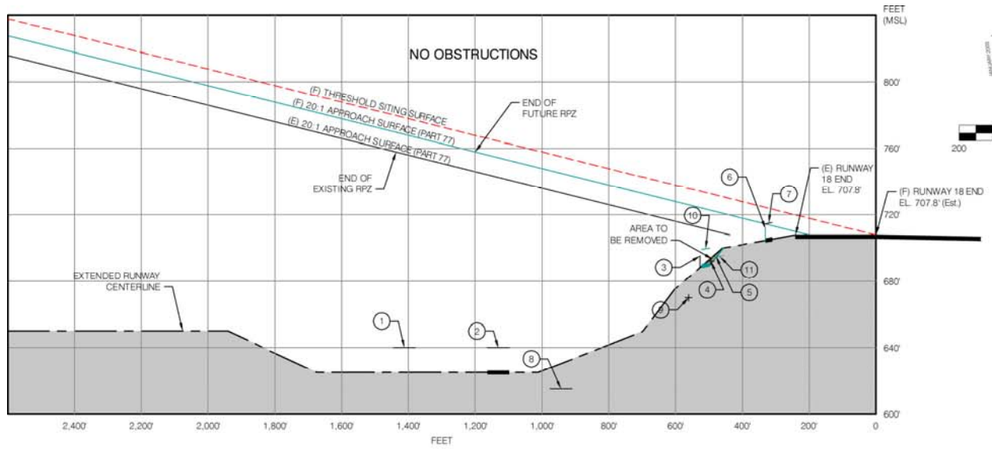
Runway Protection Zone Plan

The existing and future Runway Protection Zones (RPZs) are depicted in plan view on Figure 6-8. The existing RPZs encompass 8.035 acres each. The RPZ for Runway 36 is located within airport property. Runway 18 RPZ extends approximately 900 feet beyond the airport boundary. Approximately 7.5 acres lie outside the airport boundary. However, 5.7 acres of this area is protected by ground easements, which prevent any structures from being constructed. Approximately 1.4 acres of the RPZ is protected by avigation easements. The remaining 0.4 acres is unprotected. Homes were recently constructed along the western edge of the RPZ and therefore, the RPZ encompasses some side slopes of residential parcels.

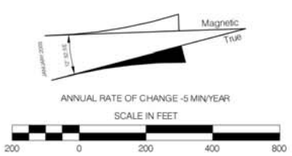
The future location of the RPZs will change because of the proposed runway translation. Due to the planned 240-foot translation of the runway to the south, the RPZs will also shift to the south a corresponding distance. The new RPZs will still be located 200 feet beyond the physical runway ends. Therefore, when the runway and RPZ is translated the area outside the airport boundary is reduced to 5.84 acres. The new location of the RPZ will encompass land not currently protected by the existing ground protection easement. This involves approximately 0.7 acres of additional land for which ground protection easements should be acquired. The need for these easements is dependent on the runway translation, and therefore the acquisition of easements can be deferred until the programming of the runway translation is better defined. The future location of the RPZ associated with Runway 36 remains within the airport boundary.

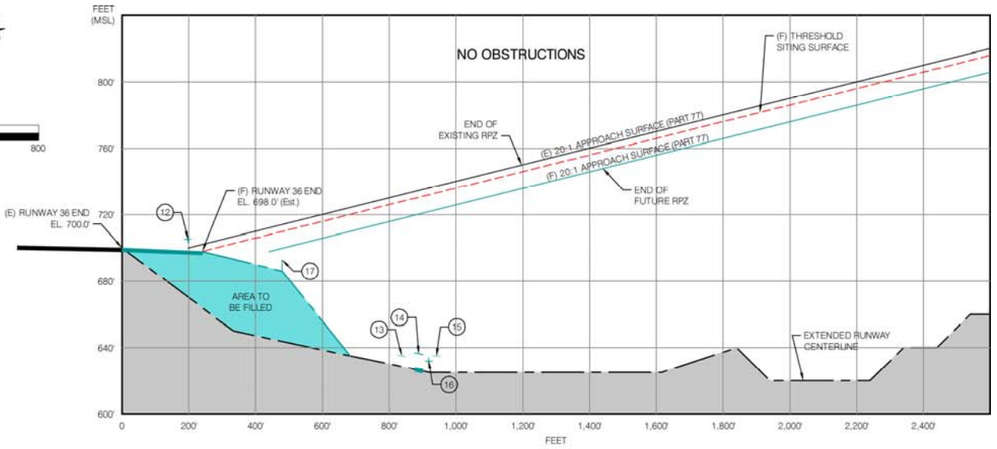
On-airport objects located within both RPZs include future and existing roads and future security fencing. On the north end, the future security fence is approximately 4 feet above the future runway elevation and the future and existing roads are 8 feet below and 7 feet above the future runway end, respectively. On the south end, the future security fencing is 5 feet below the future runway end and the future road is 62 feet below the future runway end. The north end also includes the airport perimeter fence, which is 13 feet below the future runway end. On the north end, off-airport objects include Mission Road and the side slopes of some residential parcels. One object is identified on the Runway Protection Zone Plan as to be abandoned. This is a road located on-airport, which will be replaced by the future on-airport road.

Approximately 10 recently constructed homes are located within the Runway 18 RPZ. Residences are prohibited within the RPZ per FAA Advisory Circular 150/5300-13. This deviation is mitigated by the proposed translation of the runway to the south. Translating the runway 240 feet south also shifts the RPZ 240 feet south and thus the 10 homes will be outside of the RPZ.

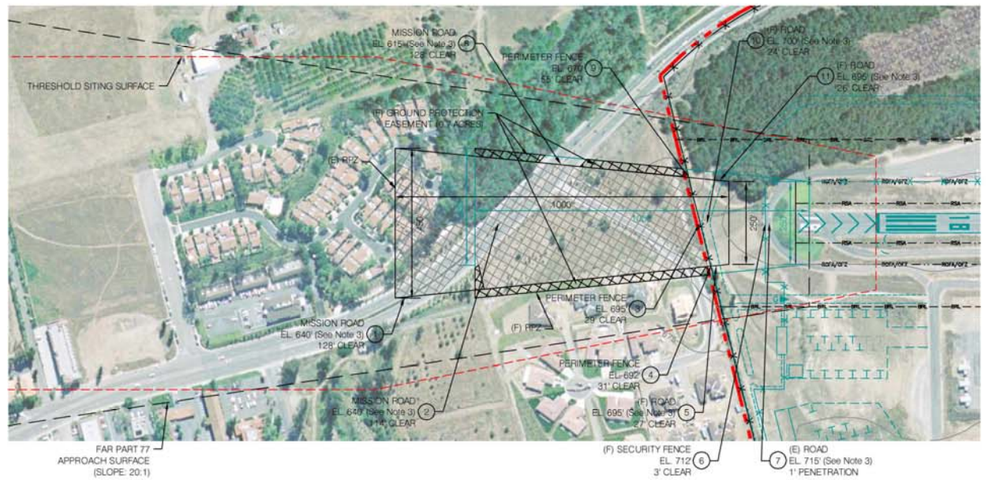


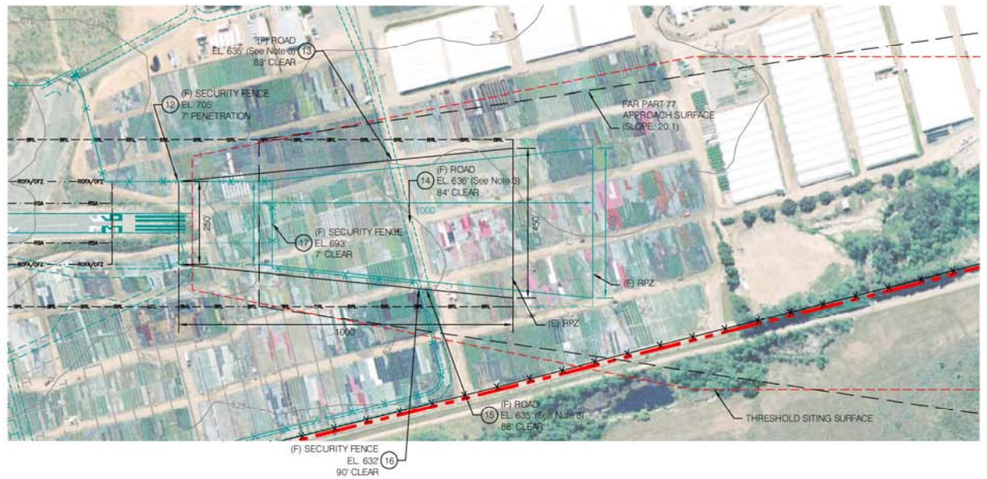
RUNWAY 18
SCALE: HORIZONTAL 1" = 200'
VERTICAL 1" = 40'





RUNWAY 36
SCALE: HORIZONTAL 1" = 200'
VERTICAL 1" = 40'





NOTES:
1. All elevations are in feet above mean sea level (MSL).
2. Negative numbers in the Clear column of the Obstruction Identification Table indicate penetrations.
3. Fifteen feet added to road elevations (Mission Road). Ten feet added to private road elevations (on-airport road).
4. Future security fencing is outside of the Obstacle Free Zone (OFZ).
5. All elevations are estimates.
6. Plan view aerial photography provided by the County of San Diego GIS, dated April 2004.

ABBREVIATIONS:

BRL	Building Restriction Line
(E)	Existing
EL. & ELEV.	Elevation
Est.	Estimate
(F)	Future
FAR	Federal Aviation Regulation
OFZ	Obstacle Free Zone
ROFA	Runway Object Free Area
RSA	Runway Safety Area

LEGEND

DESCRIPTION	EXISTING	FUTURE
AIRFIELD PAVEMENT	AERIAL PHOTO	
AIRPORT BOUNDARY		SAME
BUILDINGS	AERIAL PHOTO	
BUILDING RESTRICTION LINE (BRL)		SAME
GROUND CONTOURS	995'	
FAR PART 77 APPROACH SURFACE	NOT SHOWN	
FENCE	X X	X X
ROAD/VEHICLE PARKING	AERIAL PHOTO	
RUNWAY SAFETY AREA (RSA)	RSA	RSA
RUNWAY OBJECT FREE AREA (ROFA) / OBSTACLE FREE ZONE (OFZ)	ROFA/OFZ	ROFA/OFZ
RPZ EASEMENT		
THRESHOLD SITING SURFACE	NOT SHOWN	

PART 77 OBSTRUCTION IDENTIFICATION TABLE

OBS. No.	DESCRIPTION	ELEV.	CLEAR	PROPOSED ACTION
1	MISSION ROAD	640'*	128'	NONE
2	MISSION ROAD	640'*	114'	NONE
3	PERIMETER FENCE	695'	29'	NONE
4	PERIMETER FENCE	692'	31'	NONE
5	FUTURE ACCESS ROAD	695'*	27'	NONE
6	FUTURE SECURITY FENCE	712'	3'	NONE
7	EXISTING ACCESS ROAD	715'*	-1'	TO BE ABANDONED
8	MISSION ROAD	615'*	128'	NONE
9	PERIMETER FENCE	670'	56'	NONE
10	FUTURE ACCESS ROAD	700'*	24'	NONE
11	FUTURE ACCESS ROAD	696'*	26'	NONE
12	FUTURE SECURITY FENCE	705'	-7'	SEE NOTE 4
13	FUTURE ACCESS ROAD	635'*	83'	NONE
14	FUTURE ACCESS ROAD	636'*	84'	NONE
15	FUTURE ACCESS ROAD	635'*	88'	NONE
16	FUTURE SECURITY FENCE	632'	90'	NONE
17	FUTURE SECURITY FENCE	693'	7'	NONE

* SEE NOTE 3

This is a reduced version of a large size drawing.

Figure 6-8
Runway Protection Zone Plan

On-Airport Land Use Plan

Figure 6-9 depicts existing and future land uses at Fallbrook Community Airpark and depicts the existing and proposed facilities at the airport. The existing land use boundaries are derived from the Fallbrook Community Airpark Major Use Permit Modification Plot Plan, approved December 3, 1999. The majority of the airport is designated as non-aviation uses, consisting of agriculture, sports/community, and park uses. Agriculture is the predominant land use at the airport. Four lessees use the agriculture land: Color Spot, Jackson Hartley, McDaniel Brothers Partnership, and Subtropical Fruit Company. Sports/community land uses are located in the southeastern portion of the airport. The Fallbrook Tennis Club, Fallbrook Sports Association, and Fallbrook Community Youth Baseball are located within these areas. The remaining non-aviation use area is designated as park use. This area is located south of the existing administration building, north of the existing transient ramp, and east of the runway. A portion of the park area is also designated as restricted open space. Restricted open space is also present on the southwestern corner of the airport.

Aviation land uses are confined to the northwestern corner of the airport, and encompass approximately 81 acres (including the area designated as restaurant). As it can be seen on Figure 6-9, all of the existing aviation facilities are located within the aviation use area. It can also be seen that all of the landside facilities necessary to meet the forecast can be accommodated within the aviation area. However, the translation of the runway to provide adequate runway safety areas will require an additional 2.5 acres to be designated as aviation land use. This additional area will also accommodate the runway object free area. Additionally, the master plan recommends developing 0.7 acres near the helicopter area to provide a building area adjacent to helicopter operations.

Airport noise contours are based on a noise contour analysis performed in 2000[1]. The contours have been shifted 240 feet to the south to take into consideration the translation of the runway. As it can be seen, the CNEL 60 contour is located within airport property.

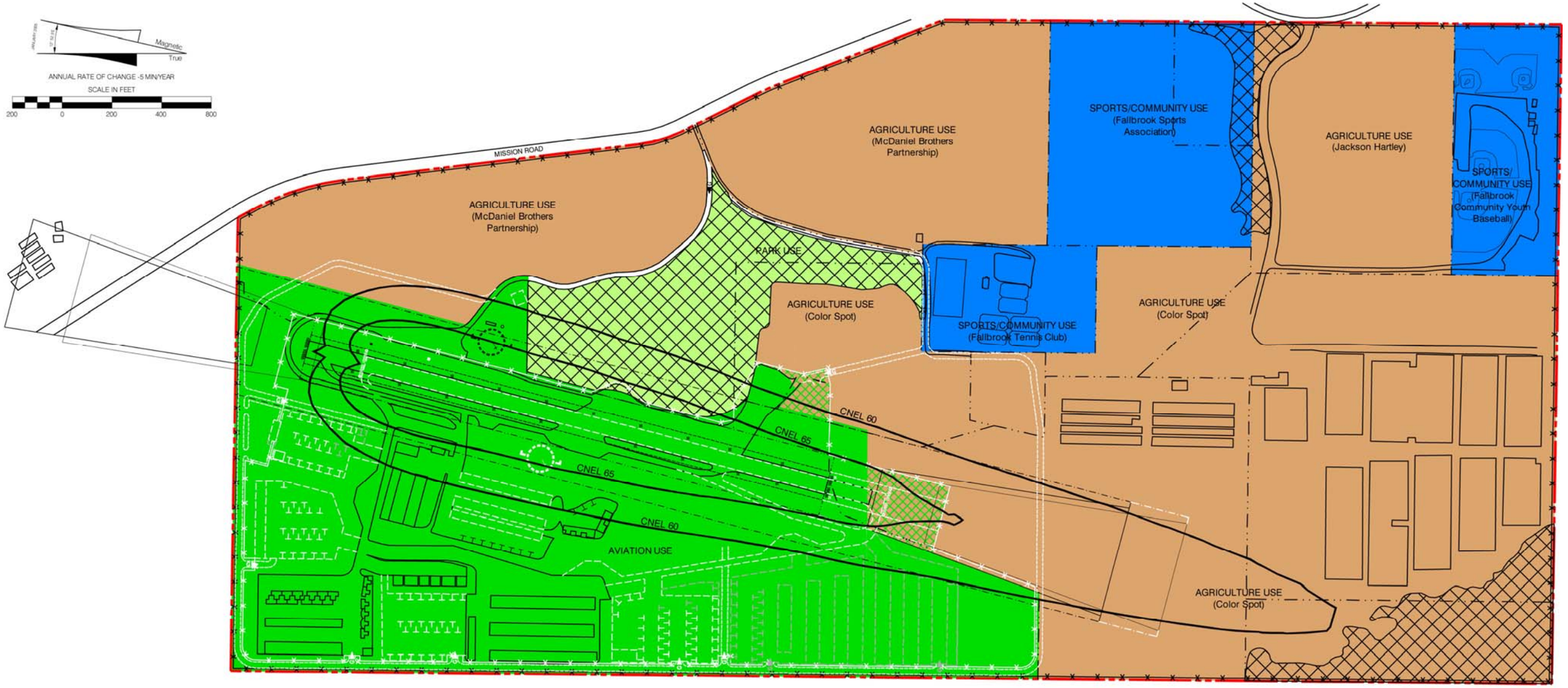
Property Map – "Exhibit A"

This drawing, presented as Figure 6-10, shows that the airport is comprised of one tract of land, deeded to the County in 1963. The land, which the Airport is on, was once a part of Camp Pendleton. Of the 290 acres, 142 acres of land were deeded to the County of San Diego through Section 16 of the Federal Airport Act. Land deeded via Section 16 will automatically revert to the U.S. Government if the land ceases to be used as an airport for a period of six months. The remaining 148 acres were deeded to the County via Public Law No. 289. This law allows for revenue generating purposes, in addition to airport uses, to financially support the operation and maintenance and future expansion of the Airport to exist.

Easement interest outside the property line and utility easements within the property line are shown on the Airport property map. As previously mentioned, ground protection easements are presently held on 5.7 acres on the north end for RPZ protection. Acquisition of additional easements in this area is necessary due to the proposed translation of the runway and will depend on the timing of the runway improvement. This involves approximately 0.7 acres. Additionally, two areas north of the airport also have avigation easements.

The primary intent of the Exhibit A property map is to identify all land which is designated as Airport property and to provide an inventory of all parcels which make up the Airport.

[1] Aircraft Noise Exposure Report Fallbrook Community Airpark. Brown-Buntin Associates, Inc., Visalia, CA. May 16, 2000.



This is a reduced version
of a large size drawing.

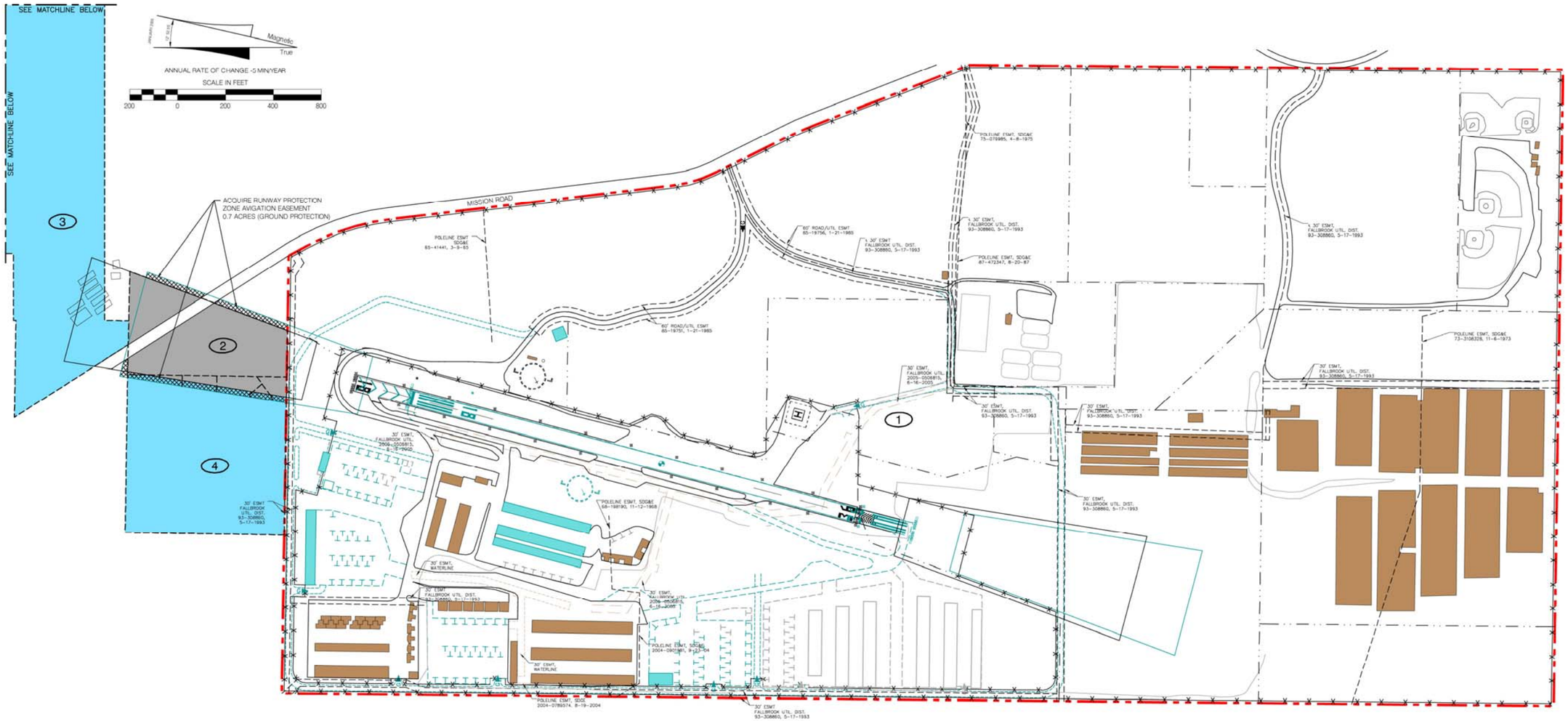
LEGEND		
DESCRIPTION	EXISTING	ULTIMATE
AGRICULTURE USE		SAME
AIRPORT BOUNDARY		SAME
AVIATION USE		
MAJOR USE PERMIT BOUNDARIES		SAME
RESTRICTED OPEN SPACE		SAME
PARK USE		SAME
SPORTS/COMMUNITY USE		SAME

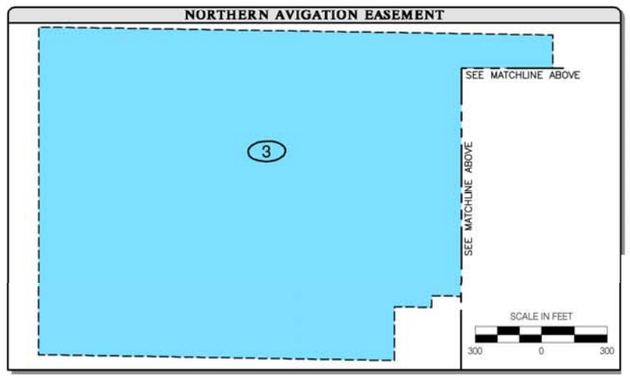
NOTES:

1. Existing land uses based on Fallbrook Air Park Plot Plan, approved January 20, 1995.
2. Development proposed in the master plan is shown in white. Development beyond 2025 is shown in gray.
3. Source of noise contours: Aircraft Noise Exposure Report, Brown-Buntin Associates, Inc., May 2000.

The preparation of this plan was financed in part through a planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the

Figure 6-9
On-Airport Land Use Plan





LEGEND

- Existing Runway Protection Zone Easement (ground protection)
- Existing Avigation easement
- Future Runway Protection Zone Easement (ground protection)

ABBREVIATIONS

AC Acres
DOC. Document

PROPERTY TABLE

(1)	TYPE OF INTEREST	BOOK / PAGE	DOC. NUMBER	ACREAGE	DATE	COMMENTS
1	FEE			288.5	10/01/1963	LAND DEEDED FROM NAVY TO COUNTY OF SAN DIEGO
2	EASEMENT		90-106128	5.7*	02/28/1990	INCLUDES 100' WIDE ROAD UTILITY EASEMENT
3	EASEMENT		1997-0215428	80*	05/09/1997	PEPPER TREE RANCH
4	EASEMENT		2001-0417444	10	06/21/2001	INCLUDES 100' WIDE ROAD UTILITY EASEMENT

* ACREAGE IS CALCULATED

This is a reduced version of a large size drawing.

Figure 6-10
Property Map – "Exhibit A"

COMPREHENSIVE LAND USE PLAN (CLUP) ISSUES

The master plan includes one item related to runway configuration not reflected by the current CLUP: the translation of the runway 240 feet south. Furthermore, the State of California, Department of Transportation, Division of Aeronautics, in January 2002, published the *California Airport Land Use Planning Handbook (Handbook)* that contains updated guidance for developing airport compatibility plans. The *Handbook* provides guidelines regarding the establishment of land use compatibility policies related to (1) aircraft noise and (2) off-airport aircraft accident potential and safety. It is recommended the County submit this information to the Airport Land Use Commission (ALUC) in order to update the Fallbrook Community Airpark CLUP.

Noise

A noise contour analysis was conducted for the airport in May 2000.[2] It included future CNEL noise contours based on 26,000 annual operations that depicted the CNEL 65 contour within the airport boundary. The forecast number of annual operations in the master plan for the year 2025 is 51,700 and the affect of these on the previously prepared future noise contours would be an increase of approximately 3 CNEL. Based on this a CNEL 65 for the forecast (2025) number of operations would also remain on airport property. Therefore, the noise impacts will not be significant.

The San Diego County Regional Airport Authority (SDCRAA) will update the Comprehensive Land Use Plan (CLUP) for the County and will include Fallbrook Community Airpark. As part of the update, new noise contours should be prepared based on the latest forecast of activity for the Airport.

Safety Zones

The existing CLUP depicts clear zones, trapezoidal areas similar to runway protection zones, as the safety zones for Fallbrook Community Airpark. As described above, the California Division of Aeronautics published new guidelines in its *Handbook*. The previous edition of the *Handbook*, published in 1993, emphasized the concepts and processes in airport land use compatibility planning. The views expressed in that edition were characterized as only "suggestions and recommendations." However, legislation passed in 1994 established a requirement that airports and land use commissions "shall be guided by information" in the *Handbook* (or any future updates) when formulating, adopting, or amending an airport land use compatibility plan. Consequently, the 2002 *Handbook* is much more definitive in the guidance it provides. Nevertheless, the 2002 *Handbook* does not constitute State policy, standards, or regulations. Development of airport land use policy is the responsibility of each individual airport land use commission.

Safety compatibility policies consist of two components: zones indicating locations around an airport with differing levels of aircraft accident risk and criteria indicating the compatibility or incompatibility of various types of land uses within these zones. The purpose of developing such policies is to limit the consequences, which aircraft accidents can have on people and property near airports.

Safety Compatibility Zone Guidelines

The primary basis for the delineation of safety zones around airports is the category of runway, with the category based on length.

[2] Ibid.

Runways are categorized based on the following lengths:

- Runway lengths less than 4,000 feet.
- Runway lengths of 4,000 to 5,999 feet.
- Runway lengths of 6,000 feet or more.

Six safety zones are identified in the *Handbook* for each of the three runway sizes:

- Zone 1: Runway Protection Zone
- Zone 2: Inner Approach/Departure Zone
- Zone 3: Inner Turning Zone
- Zone 4: Outer Approach/Departure Zone
- Zone 5: Sideline Zone
- Zone 6: Traffic Pattern Zone

The intent of the set of safety zones is that risk levels be relatively uniform across each zone, but distinct from the other zones. The *Handbook* description of these zones is contained in Appendix E (*Handbook* Table 9B).

Safety compatibility zone examples contained in the *Handbook* for runway categories applicable to Fallbrook Community Airpark are shown in Appendix E (Figure 9K of the *Handbook*). *Handbook* Example 1 (runway length less than 4,000 feet) would apply to Fallbrook Community Airpark as the runway is 2,160 feet long.

Fallbrook Community Airpark generally follows Example 1 in Figure 9K of the *Handbook*. Therefore, Example 1 is applied to the airport with adjustments as described below.

Adjustments to Safety Zones for Fallbrook Community Airpark

The *Handbook* provides that adjustments to the zones depicted in Figure 9K of the *Handbook* may be appropriate when applying them to an individual airport due to the operating characteristics of that airport. The *Handbook* describes several operational variables, which could affect the shape of one or more safety zones:

- Instrument approach procedures
- Other special flight procedures or limitations
- Runway use by special purpose aircraft
- Small aircraft using long runways
- Runways used predominantly in one direction
- Displaced landing thresholds

The discussion of these is reproduced in Appendix E (Table 9A of the *Handbook*).

The San Diego County Regional Airport Authority acting as the Airport Land Use Commission (ALUC) of San Diego County has the responsibility for developing land use policies related to Fallbrook Community Airpark, including the modification of safety zones to address the 2002 *Handbook* guidelines. Based on existing operating conditions at the airport, the following are considered appropriate adjustments to the safety compatibility zone example given in the *Handbook* when applying them to Fallbrook Community Airpark:

- **Traffic Pattern Zones.** The Traffic Pattern Zones should be adjusted to be consistent with the actual traffic patterns flown at the airport. The traffic pattern for the airport is located only on the east side of the airport. This pattern prevents aircraft from flying into restricted airspace associated with Camp Pendleton. Therefore, the traffic pattern for Fallbrook Community Airpark is located only to the east. Additionally, there is a published noise abatement procedure, generally described as follows:

  Aircraft departing Runway 18 climb straight to 1,200 feet MSL and turn left onto the crosswind leg when abeam the water tank, approximately 1.1 miles east-southeast of the runway. Aircraft turn left onto the downwind leg when abeam the water tank and fly the downwind leg east of the Fallbrook Union High School. Aircraft landing on Runway 18 extend the downwind leg to allow a one-third mile final approach.

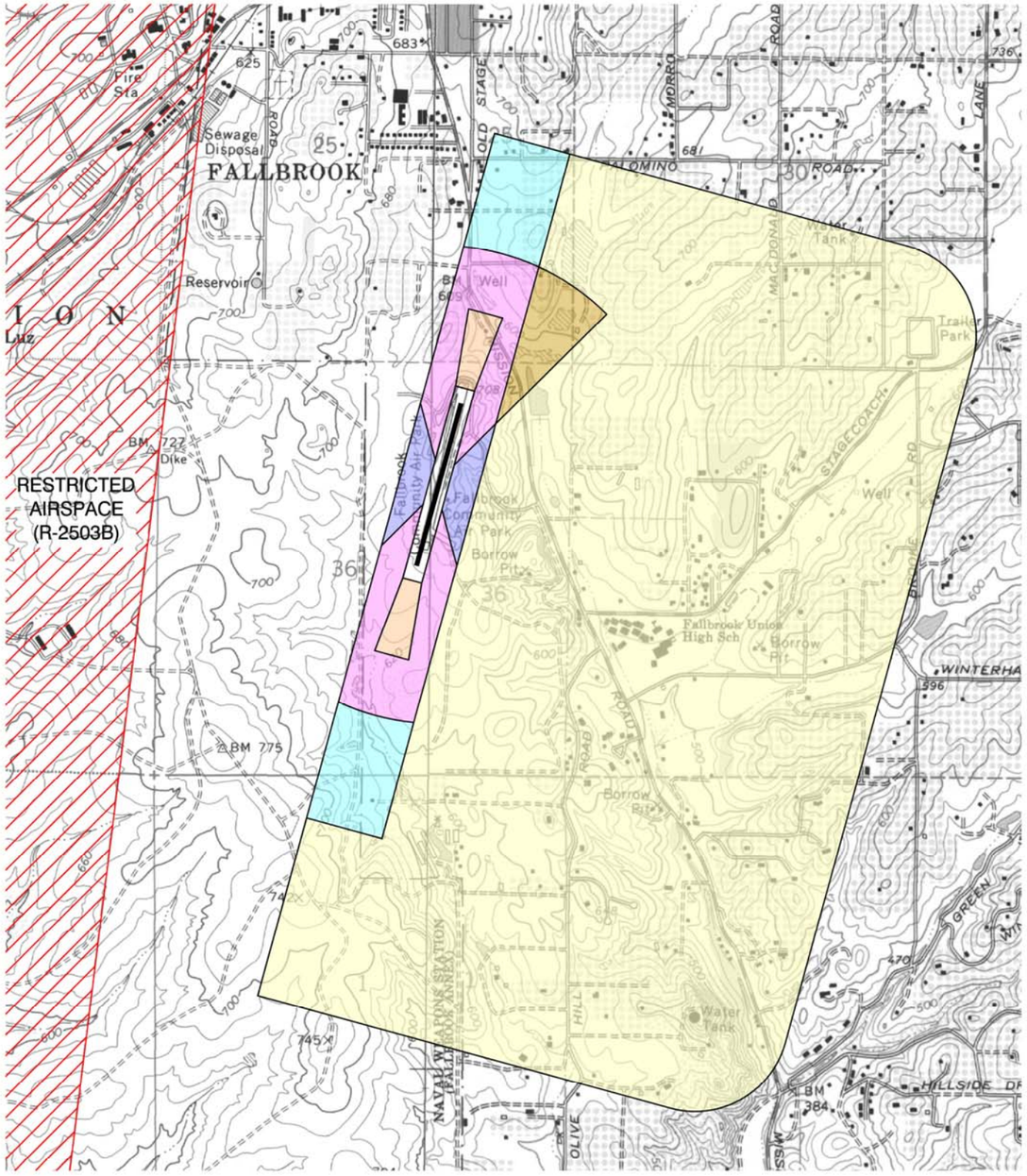
The Traffic Pattern Zone depicted on Figure 6-11 reflects this procedure.

- **Inner Turning Zones.** The Inner Turning Zones should be adjusted to reflect actual areas in which turns are made at each runway end. Departures on Runway 18 turn left approximately three-quarters of a mile after takeoff and departures on Runway 36 turn right less than one-third of a mile after takeoff. Example 4, General Aviation Runway with Single-Sided Traffic Pattern, as contained in the *Handbook*, is appropriate for Fallbrook Community Airpark. As noted above, the single-sided traffic pattern is due to the restricted airspace to the west of the airport. The inner turning zone for Runway 36 is not shown because aircraft following the noise abatement procedure will not turn in this area, rather they will commence a left turn upon reaching an attitude of 1,200 feet MSL.

Safety Zones for Fallbrook Community Airpark

Figure 6-11 depicts the adjusted safety compatibility zones for the airport. The above-described adjustments to the safety zones are recommended when applying the 2002 *Handbook* guidelines. It is recommended that the County adopt these safety zones and submit them to the ALUC when re-evaluating the CLUP. These may then be adopted or modified as part of the CLUP update. Figure 6-11 illustrates the application of the 2002 *Handbook* guidelines for safety compatibility zones to Fallbrook Community Airpark based on the long-term plan for the airport as depicted on the ALP and described in this Study. The dimensions of all zones, except the Traffic Pattern Zone, are as shown in Appendix E, Figure 9K of the *Handbook*, Example 1. As described above, the Traffic Pattern Zone was adjusted to encompass the actual airport traffic patterns and to accommodate the restricted open space associated with Camp Pendleton.

Land use guidelines applicable to the safety zones and contained in the *Handbook* should be followed when considering development proposals in the vicinity of the airport. As part of the CLUP update, the compatibility of adjacent land uses should be addressed.



LEGEND

Symbol	Zone	Maximum Residential Density[1] (Dwelling Units per Gross Acre)			Maximum Non-Residential Density (Average number of People per Gross Acre)		
		Rural Farmland/ Open Space	Rural/ Suburban	Urban	Rural Farmland/ Open Space	Rural/ Suburban	Urban
	1. Runway Protection Zone	0	0	0	0[3]	0[3]	0[3]
	2. Inner Approach/ Departure Zone	Maintain[5]	1 d.u. per 10-20 ac.	0	10-25	25-40	40-60
	3. Inner Turning Zone	Maintain[5]	1 d.u. per 2-5 ac.	Infill[2]	60-80	60-80	80-100
	4. Outer Approach/ Departure Zone	Maintain[5]	1 d.u. per 2-5 ac.	Infill[2]	60-80	60-80	80-100
	5. Sideline Zone	Maintain[5]	1 d.u. per 1-2 ac.	Infill[2]	80-100	80-100	100-150
	6. Traffic Pattern Zone	No Limit	No Limit	No Limit	150	150	No Limit[4]

[1] Clustering to preserve open land encouraged in all zones.

[2] Allow infill at up to average of surrounding residential area only if non-residential uses are not feasible.

[3] Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied.

[4] Large stadiums and similar uses should be prohibited.

[5] Maintain current zoning if less than density criteria for rural/suburban setting.

Source: California Airport Land Use Planning Handbook, State of California Department of Transportation Division of Aeronautics, January 2002.

Notes: 1. Restricted airspace location is graphically approximated.
2. Safety zones are based on the proposed runway location.

NORTH

0 1500 3000
Scale in Feet

Figure 6-11
Fallbrook Community Airpark Safety Zones

Chapter 7
Environmental Evaluation/Analysis

Chapter 7
Environmental Evaluation/Analysis

INTRODUCTION

This chapter presents the environmental evaluation that was conducted as part of the master plan work program and additional information that can be used to update the Comprehensive Land Use Plan (CLUP) for the airport. The scope of the environmental evaluation consisted of the preparation of this Environmental Evaluation.

The Environmental Evaluation was based on the recommended improvements presented in Chapter 6, Airport Plans, and the aviation activity forecasts provided in Chapter 4. It consists of an overview of the environmental constraints associated with the airport property, for the purposes of facilitating an Initial Study (IS) pursuant to the California Environmental Quality Act (CEQA, California Public Resources Code 21000 et seq.) that is anticipated to be conducted concurrently with the National Environment Policy Act (NEPA) process for the proposed master plan.

This Environmental Evaluation covers the 20-year planning period of the master plan and identifies airport improvements for the three defined development phases. The first development phase includes the highest priority improvement projects that are proposed for the short-term period 2006-2010. The second development phase covers the period 2011-2015 and the third development phase covers the long-term period 2016-2025. In addition, the Federal Aviation administration (FAA) will use the data in this report to assist in their evaluation of the Airport Layout Plan (ALP). Recommended projects in the ALP may or may not require further study under NEPA. Due to the relatively minor changes to the airport, the master plan improvements and the ALP may fall under a Categorical Exclusion to the requirements of NEPA. However, it is possible that if a Categorical Exclusion is not the appropriate environmental document under NEPA for the master plan and ALP, additional environmental study, anticipated to be an Environmental Assessment in support of a Finding of No Significant Impacts (FONSI), will be necessary.

In addition, future evaluation under CEQA will be required. This may consist of a Mitigated Negative Declaration (MND) or an Environmental Impact Report (EIR), depending on the identified project impacts, their significance under CEQA, and whether those impacts can be avoided or mitigated to below a level of significance. As part of this Environmental Evaluation, P&D performed a site survey of the airport property on October 29, 2004 to evaluate the presence of sensitive species and habitats. No focused surveys for sensitive species were performed during that site visit.

SUMMARY OF IMPROVEMENTS

The proposed improvements consist of the following phased development as previously presented in Chapter 6.

Phase 1 Development (2006 to 2010)

- Construct Helipad Improvements (lighting and wind sock)
- Obstruction Removal (Public Viewing Area)
- Replace Segmented Circle
- Design and Construct Security Fencing
- Construct Transient Ramp and Taxiway
- Reconstruct Taxiway Connector between Taxiway A and Aircraft Hangar Management
- Conduct Drainage Master Plan Study
- Translate Runway 240 Feet South
- Acquire Runway Protection Zone Easements
- Upgrade Electrical Vault
- Construct 2 inch Overlay on the East/West Taxiway and Install Taxiway Lights
- Install Airfield Signage
- Construct Road from Mission Road to L18 Airpark Storage Inc.
- Relocate Rotating Beacon
- Slurry Seal Runway 18-36 and Taxiway A
- Construct 47 Based Aircraft Tie-downs

Phase 2 Development (2011 to 2015)

- Construct Diagonal Taxiway Including Taxiway Edge Lights
- Slurry Seal Pavements Constructed in 2006
- Construct General Aviation Terminal/Airport Administration Building and associated improvements
- Slurry Seal East/West Taxiway
- Construct 6 Based Aircraft Tie-Downs
- Slurry Seal Runway 18-36, Taxiway A, and 47 Based Aircraft Tie-Downs Constructed in 2009
- Construct Aircraft Maintenance Hangar
- Slurry Seal Helipad Area, Taxiway Connector (Taxiway B), Diagonal Taxiway (Taxiway E), and Transient Ramp

Phase 3 Development (2016 to 2025)

- Slurry Seal Runway, Taxiway, Apron Pavements
- Install Runway End Identifier Lights (Runway 36)
- Construct Based Aircraft Tie-Downs
- Construct 7 Based Aircraft T-Hangars
- Construct 8 Transient Tie-Downs
- Construct Airport Maintenance Facility
- Connect Road to Tennis Club Access Road
- Improve Access Road to Helipad
- Develop GPS Approach Procedure (Runway 36)

AIRCRAFT OPERATIONS

Aircraft operations are projected to increase from present levels of approximately 21,000 annual operations to 51,700 annual operations by 2025. The majority of these operations will be by single engine piston aircraft, accounting for approximately

50,600 operations by 2025, or 98 percent of all operations. Because the projected aircraft types are not expected to change from the existing types of aircraft currently operating at this airport, the existing airport and land uses on the airport property are not expected to change substantially over the forecast period.

TOPICS

The topics for this Environmental Evaluation are based on federal guidelines contained in FAA Order 5050.4A "Airport Environmental Handbook" (FAA, 1985) and include a total of 20 specific impact categories. Some of the following discussions are based on the County of San Diego General Plan and the Fallbrook Community Plan. In addition, several topics that are usually required under CEQA are addressed in this Environmental Evaluation, for a more comprehensive environmental evaluation. The following topics are addressed in this Environmental Evaluation:

- Noise
- Compatible Land Use
- Social Impacts Including Environmental Justice (EJ)
- Air Quality
- Riparian Vegetation/Potential Wetlands
- Floodplains
- Wild and Scenic Rivers
- Costal Barriers
- Farmlands
- Light Emissions
- Costal Zone Management Program
- Historic, Architectural, Archeological and Cultural Resources
- Department of Transportation Act, Section 4(f) Resources
- Energy Supply and Natural Resources
- Biotic Communities
- Endangered and Threatened Plant and Animal Species
- Solid Waste Impacts
- Construction Impacts
- Induced Socioeconomic Impacts

Noise

FAA Order 5050.4A states that a noise analysis is not required when the proposal involves Airport Design Group I and II airplanes at utility airports (such as Fallbrook) where aircraft operations do not exceed 90,000 annually adjusted operations. It is noted that airport reference code A-I (small) indicated on the ALP is intended to accommodate Design Group I aircraft with maximum weights less than 12,500 pounds. The total number of operations indicated by the long term (2025) forecast is 51,700 annual operations all of which are by propeller driven aircraft. Therefore, the proposed master plan would not require a detailed noise analysis.

A noise contour analysis was conducted for the airport in May 2000.[1] It included future CNEL noise contours based on an assumed 26,000 annual operations with the runway located at the existing location. That analysis indicated that the CNEL 65 contour fell completely within the airport boundary.

Under the master plan, the forecast number of annual operations in 2025 in the master plan will be greater than was assumed in the noise contour analysis in 2000, at 51,700 annual operations. In addition, under the master plan, the runway will be translated/shifted approximately 240 feet south of its existing location. The shifted runway will be entirely within the existing airport property, and further away from residential uses north of the airport property. As a result of the shift of the runway, it is anticipated that the CNEL 65 contour for the forecast (2025) number of operations with the master plan update will still be within the airport property, even with the increase in annual operations by 2025. It was concluded that the proposed master plan would not result in significant adverse noise impacts off the airport property because the 2025 65 CNEL noise contour is

[1] Aircraft Noise Exposure Report Fallbrook Community Airpark. Brown-Buntin Associates, Inc., Visalia, CA. May 16, 2000.

expected to be fully within the airport property and that there will be no significant noise impacts with respect to surrounding land uses. Therefore, the noise impacts of the aviation operations under the master plan are not anticipated to be significant. As a separate action, the San Diego County Regional Airport Authority (SDCRAA) will update the Comprehensive Land Use Plan (CLUP) for the County, which will include Fallbrook Community Airpark. As part of that update, updated noise contours will be prepared for Fallbrook Airport, based on the latest available forecast of activity for the airport. Those forecasts will assume the 51,700 annual operations, which are by propeller driven aircraft, and the shifted runway proposed under the master plan.

Land Use Compatibility

Land Use Designation

According to the San Diego Association of Governments (SANDAG) existing land use codes, the existing uses at the Fallbrook Community Airpark are consistent with general aviation, orchards and vineyard use, and field crop uses. These land uses are consistent with the County of San Diego land use designations for the airport property.

The proposed master plan improvements at the airport will continue the existing aviation uses at this property. These proposed improvements, because they continue the existing aviation uses, are consistent with the existing San Diego County land use designations for this site.

Pursuant to the County of San Diego Zoning Ordinance Section 7358, a use permit is required for land uses with special site or design requirements, operational characteristics or adverse effects on surrounding communities. The County, in granting the permit, may impose special conditions of approval of the permit. The first Major Use Permit (MUP) for Fallbrook Community Airport was granted to the County of San Diego Department of Public Works (DPW) in October 1963. The current MUP, dated December 3, 1999, was granted to the DPW by the San Diego County Planning Commission and is consistent with the land use codes identified by SANDAG for the airport property. The MUP allows for 300 based aircraft and the existing aviation and non-aviation (civic, wholesale agriculture and recreational) uses on the airport property. Figure 6-1, provided earlier, shows the various land use designations in the current MUP. The proposed master plan improvements will continue the existing aviation uses. Therefore, the proposed master plan improvements would be considered compatible with the existing land uses in the vicinity of the airport.

Safety

The compatibility of aviation uses with land uses in the vicinity of an airport is associated with safety impacts. The State of California has published guidelines with respect to safety zones around airports.[2] The safety zones suggested for the airport are shown in Figure 6-11. As part of the CLUP update being undertaken by the SDCRAA, the safety zones shown in Figure 6-11 may be adopted or modified. The State guidelines for safety zones includes density limits for development within the safety zones. It is noted that some existing land uses within the inner and outer approach/departure zones may not be consistent with the State guidelines (such as recently constructed residential uses north of the airport). As part of the CLUP update, the compatibility of adjacent land uses will be addressed.

[2] California Airport Land Use Planning Handbook, State of California Department of Transportation Division of Aeronautics. January 2002.

Social Impacts and Environmental Justice

The social impacts considered were relocation and other community disruption, such as dividing an established community or altering surface transportation patterns (road circulation). The airport improvements recommended in the master plan will not involve the relocation of residences or businesses, alter surface transportation patterns, divide or disrupt established communities, disrupt planned development or create an appreciable change in employment. In addition, no group of people, including racial, ethnic or socioeconomic groups, will bear a disproportionate share of negative environmental consequences resulting from the proposed airport improvements recommended in the master plan. Therefore, the master plan improvements will not result in significant adverse social impacts including environmental justice.

Air Quality

FAA Order 5050.4A indicates that as a general guideline, a level of 180,000 annual aircraft operations at a general aviation airport is the threshold requiring detailed air quality analysis for proposed projects. As stated earlier, the long term forecast for the proposed master plan projects a total of 51,700 annual aircraft operations at Fallbrook Airpark in 2025, which is less than the FAA threshold for a detailed air quality analysis. Therefore, based on the number of forecast annual operations at Fallbrook Airpark and the FAA guideline, it is concluded that detailed air quality analysis is not required for the proposed master plan. As a result, consistent with FAA Order 5050.4A, it is anticipated that the master plan will not result in adverse air quality impacts.

Water Quality

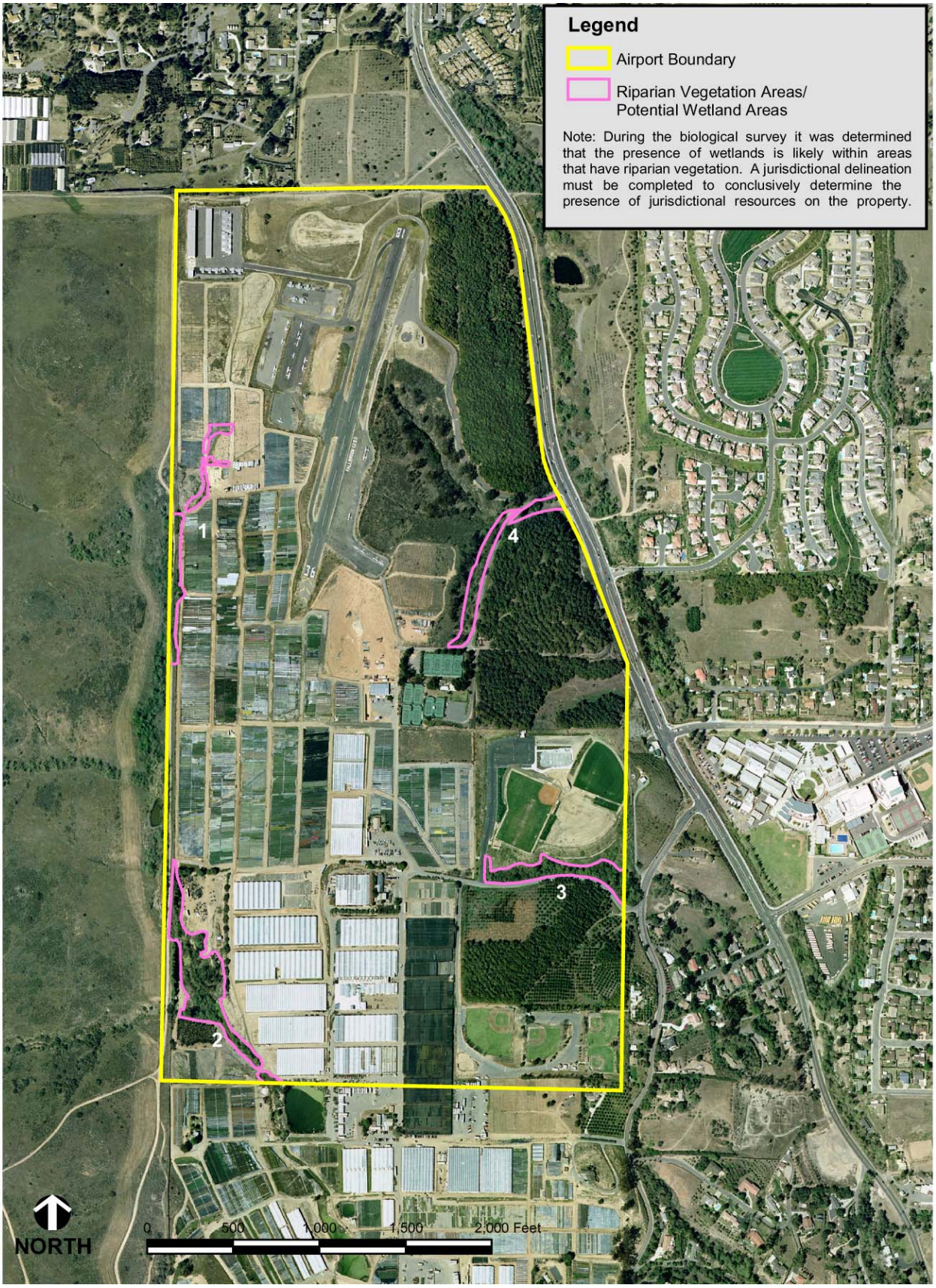
The proposed improvements at Fallbrook Community Airpark may have the potential to alter the existing drainage pattern of the site, which could result in erosion or siltation on or off site, interfere with groundwater discharge, or contribute to runoff water, which may exceed the capacity of existing or planned stormwater drainage systems.

In addition, the forecast increase in annual aviation operations at the airport under the master plan will result in increased demand and use of petroleum-based fuels. Standard guidelines (Clean Water Act (CWA)) for the containment and use of fuels are employed at airports, as regulated by the FAA, which include contingency plans for spills and containment of accidentally released hazardous substances.

As part of the recommended Phase 1 development, the public viewing area and associated hill, located along the northeastern part of the airport and runway, will be removed to comply with Federal Aviation Regulation (FAR) Part 77 as previously discussed in Chapter 6. This will require the removal of approximately 40,000 cubic yards of soil. This soil will be used as fill for the runway translation project, which is also part of the recommended Phase 1 development. Due to these changes on the airport property to remove the public viewing area and hill, and the runway translation, will modify the site terrain, and a Drainage Master Plan Study for the airport will be prepared to address issues of containment and how to direct runoff. The Drainage Master Plan Study will incorporate the requirements from the County's Stormwater Ordinance and will comply with the CWA. In addition, all construction projects involving grading are subject to water pollution prevention measures required in construction permits.

Riparian Vegetation/Potential Wetlands

In total, four general areas within the airport property boundary were determined to contain riparian vegetation, as shown on Figure 7-1, based on a site survey conducted on October 29, 2004. During the biological survey, it was determined that the presence of wetlands is likely within the riparian vegetation. However, these wetlands would have to be determined more



Source: P&D Consultants (2004)

Figure 7-1
Riparian Vegetation Areas

conclusively and precisely through a complete wetland delineation and jurisdictional determination, consistent with the requirements of the United States Army Corps of Engineers delination methodology. In addition, not all areas determined to contain riparian vegetation will have wetlands. In general, riparian vegetation is considered a sensitive natural community by the California Department of Fish and Game and requires special permits for its removal.

The biological survey conducted by P&D identified two riparian areas along the west edge of the airport property, as shown on Figure 7-1. In Riparian Area 1, the riparian plant community was southern willow scrub. Dominant plants included black willow, arroyo willow, mule fat and common cattail. Common cattail is an indicator species of wetland habitat. Some of this riparian area has established due to storm water runoff from airport facilities. Riparian Area 1 is contiguous with a riparian area that occurs outside the airport property boundary. This natural drainage flows south outside the west edge of the airport property. However, further south, the riparian plant community reenters the airport property where it becomes a United States Geological Survey (USGS) blue-line stream, which is an unnamed tributary to the San Luis Rey River, as shown in Figure 7-2.

Riparian Area 2 occurs in the southwest corner of the airport property where there is a USGS blue-line stream, as shown on Figures 7-1 and 7-2. The area contains marsh habitat where common cattail was present. This area would likely be classified as a wetland. Additional plant species located in Riparian Area 2 included black willow, arroyo willow, mule fat and eucalyptus. This riparian vegetation was present in a natural drainage feature that flows south and off the airport property. This USGS blue-line stream flows into the San Luis Rey River outside the airport property.

Riparian Area 3 occurs on the southeast part of the airport property, as shown in Figure 7-1. It drains parts of the existing nursery on the airport property, in an easterly direction and likely connects to the USGS blue-line stream that follows Mission Road. No evidence of wetlands was present in Riparian Area 3, although further analysis would be necessary to determine this conclusively. Plant species present included arroyo willow, mule fat, California sycamore, coast live oak and wild grape. Local ordinances and state regulations may require the protection of coast live oak in this area. The protection of coast live oak is dependent on the diameter at breast height (DBH) of the tree or trees potentially affected by the project.

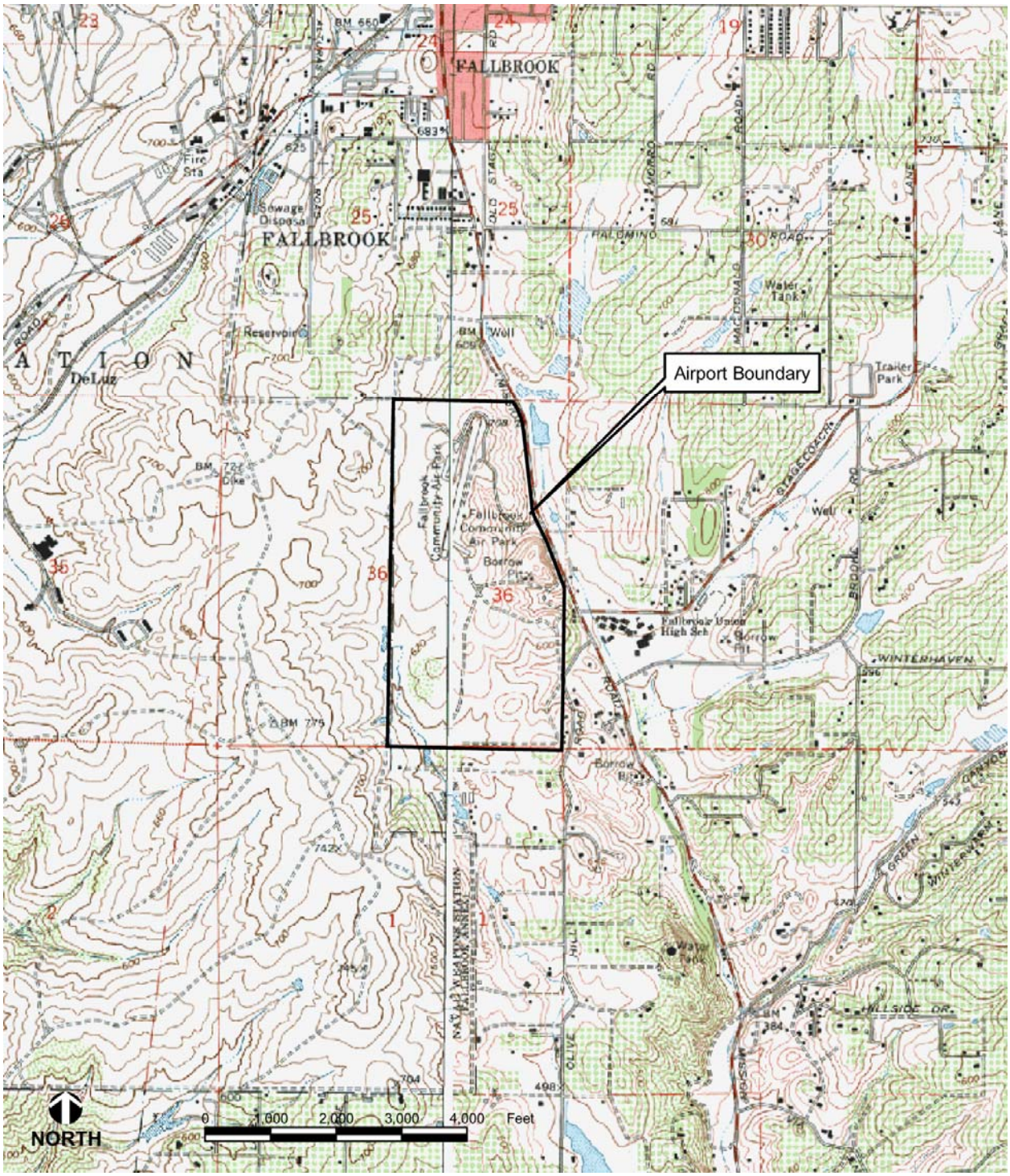
Riparian Area 4 occurs along the eastern edge of the airport property boundary, as shown in Figure 7-1. It is west of the Tennis Club access road and flows in northerly direction until it turns east and crosses the same access road. Ultimately, this natural drainage travels east underneath Mission Road where it meets an unnamed USGS blue-line stream. No evidence of wetlands was present in Riparian Area 4, although further analysis would be necessary to determine this conclusively. Plant species present in Riparian Area 4 included arroyo willow, mule fat, California sycamore, coast live oak and eucalyptus. Local ordinances and state regulations may require the protection of coast live oak in this area, dependent on the DBH of the tree or trees potentially affected by the proect.

Floodplains

The ESRI/FEMA Flood Hazard Map indicates that the project site and vicinity are not within a flood hazard area or floodplain. Therefore, because there are no known floodplains occurring on or in the vicinity of the site, the proposed master plan update will not result in adverse impacts related to floodplains.

Wild and Scenic Rivers

There are no impacts related to wild and scenic rivers because there are no identified wild and scenic rivers on or near the airport property, including areas proposed for improvement under the master plan update.



Sources: USGS (Bonsall Quad 1975: Morro Hill Quad, 1968) and P&D Consultants (2004).

Figure 7-2
USGS Topographic Map

Coastal Barriers

Coastal barriers are unique land forms that provide protection for diverse aquatic habitats and serve as the mainland's first line of defense against the impacts of severe coastal storms and erosion. Physical factors responsible for shaping these land forms include tidal range, wave energy, sediment supply from rivers and older, pre-existing coastal sand bodies and changes in local sea level.

The Coastal Barrier Resource Act and the Coastal Barrier Improvement Act of 1990 do not list any Pacific coastal barrier systems under their protection. There are no coastal barriers on or near the airport property. Therefore, no impacts related to coastal barriers will occur as a result of the proposed master plan update.

Farmlands

The California Department of Conservation, Farmland Mapping and Monitoring Program (2001), indicates that a part of the airport property contains Unique Farmland. Figure 7-3 shows the location of the Unique Farmland on the airport property. According to the State of California Department of Conservation, Unique Farmland is defined as "Lesser quality soils used for the production of the state's leading agricultural crops. This farmland is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California." Because this site has been designated as Unique Farmland, an Environmental Evaluation Worksheet must be completed. This worksheet can be completed concurrently with the CEQA Environmental Evaluation.

Light Emissions

The lighting improvements proposed at this airport under the master plan include Runway End Identifier Lights (REIL) runway lighting, taxiway edge lighting and security lighting. Lighting improvements related to runways or taxiways are identified as Categorical Exclusions under FAA Order 5050.4A and do not require environmental assessment. In addition, the REIL will be located further away from residential uses north of the airport because the master plan includes shifting the runway south 240 feet. This will make the REIL less visible for residents north of the airport property. It should be noted that pilots approaching the runway during night flights will turn on and off the REIL by remote control, which would minimize the use of lights during the night. The existing rotating beacon that currently operates at the airport will continue to operate after implementation of the proposed master plan improvements. Therefore, no significant adverse impacts related to light emissions will occur as a result of the proposed master plan improvements and no special study would be required.

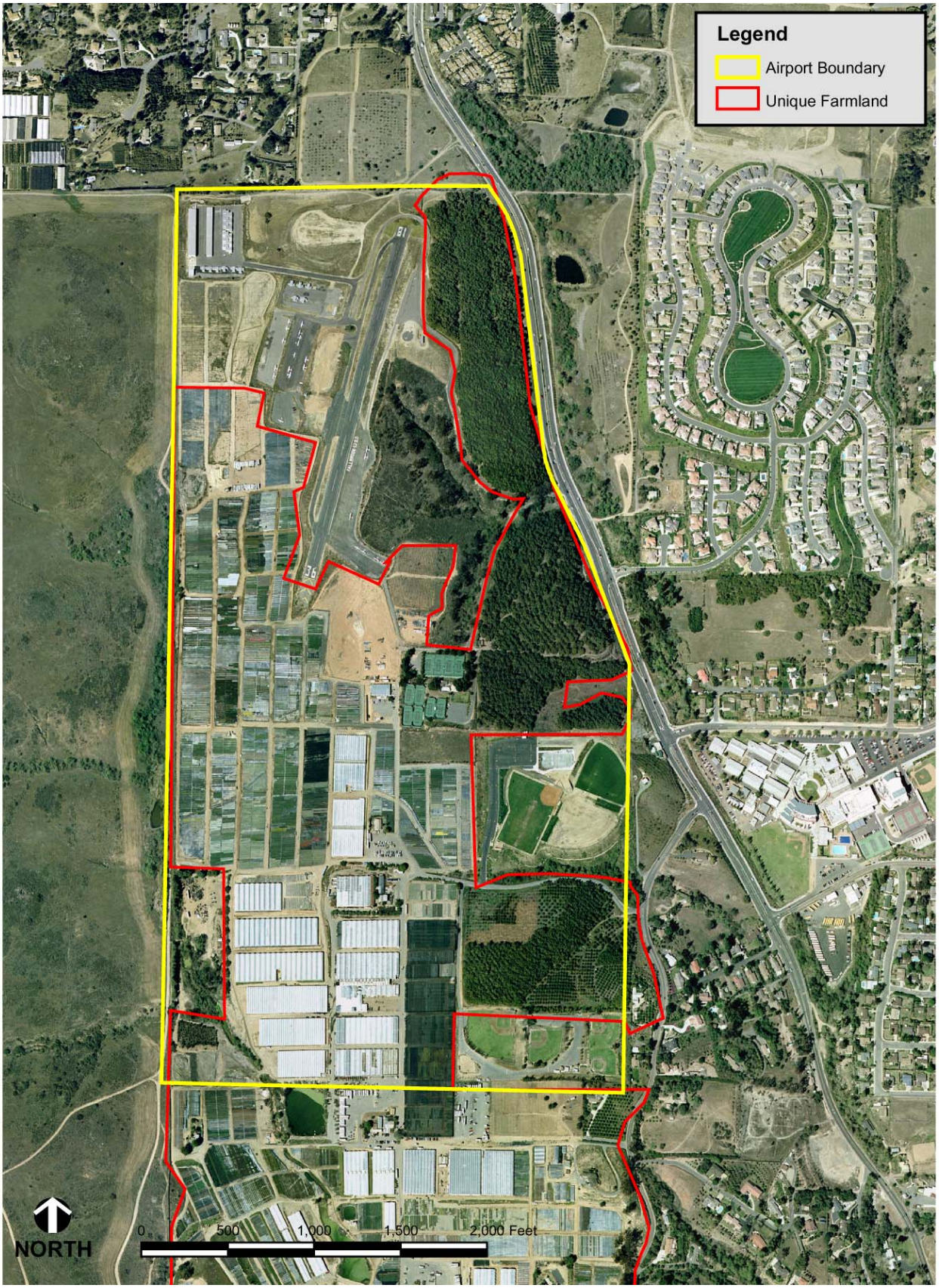
Coastal Zone Management Program

There are no impacts on coastal zone management because the Fallbrook Community Airpark is located approximately 15 miles inland, well outside of the Coastal Zone.

Historic, Architectural, Archeological and Cultural Resources

Given the amount of existing disturbance of the ground surface on the airport property, it is unlikely that cultural resources exist on site. The existing structures are less than 50 years old and do not have any unusual characteristics that would qualify them as a resource or of historical significance.

The project site has already been subject to surface disruption associated with agricultural uses and existing development on the site. As a result, any surficial archaeological and paleontological resources, which may have existed at one time, may have



Sources: PMMP (2000) and P&D Consultants (2004).

Figure 7-3
Unique Farmland in the Study Area

been disturbed. However, as stated above, the public viewing area and associated hill, located along the northeastern part of the airport and runway, will be removed to comply with FAR Part 77. This will require the removal of approximately 40,000 cubic yards of soil. There is a possibility that archaeological and/or paleontological resources exist at deep levels and that such resources could be uncovered during grading and excavation of this part of the airport site. Therefore, it is recommended that a cultural resources database search be conducted to establish what, if any, archaeological or paleontological resources of value may exist on the airport property.

Department of Transportation Act, Section 4(f) Resources

Pursuant to Section 4(f) of the United States Department of Transportation Act (49 U.S.C. 303(c)), the Secretary of Transportation shall not approve any project which:

> "… requiring the use of publicly owed land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if-
>
> (1) there is no prudent and feasible alternative to using that land; and
>
> (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use."

The regulations interpreting Section 4(f) state that "… [a]ny use of lands from a Section 4(f) property shall be evaluated early in the development of the action when alternatives to the proposed action are under study." (23 C.F.R. 771.135(b)). Use of a Section 4(f) property occurs "(1) When land is permanently incorporated into a transportation project, (2) When there is a temporary occupancy of land that is adverse in terms of Section 4(f) preservationist purposes… or (3) When there is a constructive use of the land." (23 C.F.R. 771.135(p)). Section 4(f) applies to historic properties and archeological resources only when the resource is included on, or eligible for, the National Register of Historic Places (NRHP).

The Los Jilgueros Preserve is located northeast of the airport, just on the east side of State Route 13 (Mission Road). Other local parks in the immediate vicinity of the airport include Palmomares Park approximately 1.3 miles to the east, Fallbrook Park approximately 1.9 miles to the northeast, Dan Dussault Park approximately 1.4 miles to the northwest, and Live Oak County Park is approximately 2.8 miles east of the Airport. The master plan improvements will occur entirely within the airport boundary; therefore, none of these recreation resources will be affected by the implementation of the airport master plan improvements. The airport improvements would not interfere with the outdoor recreational uses at these parks and no substantial impacts will occur.

Energy Supply and Natural Resources

Under FAA Order 5050.4A, increased fuel consumption by aircraft needs to be examined if average ground movement or run-up times are increased substantially without offsetting efficiencies in operational procedures or if the action includes a change in flight patterns. Consumption of fuel by ground vehicles shall be examined only if the action would add appreciably to access time or if there would be a substantial change in movement patterns during airport operations. A substantial increase of fuel consumption by aircraft during operations under the proposed master plan improvements is not expected. In addition, ground services vehicles will not substantially increase fuel consumption, primarily gasoline and diesel, during construction and maintenance operations.

The airport improvements recommended in the master plan will not have a major effect on the overall power consumption during construction and operation. Construction and operation of the master plan improvements will increase overall net power consumption but will not cause a significant increase in overall power consumption.

Biotic Communities

As part of this Environmental Evaluation, the entire airport property boundary was surveyed and evaluated for potential biological resources that may occur in areas planned for future development under the proposed Master Plan and to determine if future development could potentially affect any sensitive biological resources. In addition, a California Natural Diversity Data Base (CNDDB 2004) search was completed for the Morro Hill, Bonsall, Temecula and Fallbrook USGS quadrangles, which include the airport property and the surrounding areas.

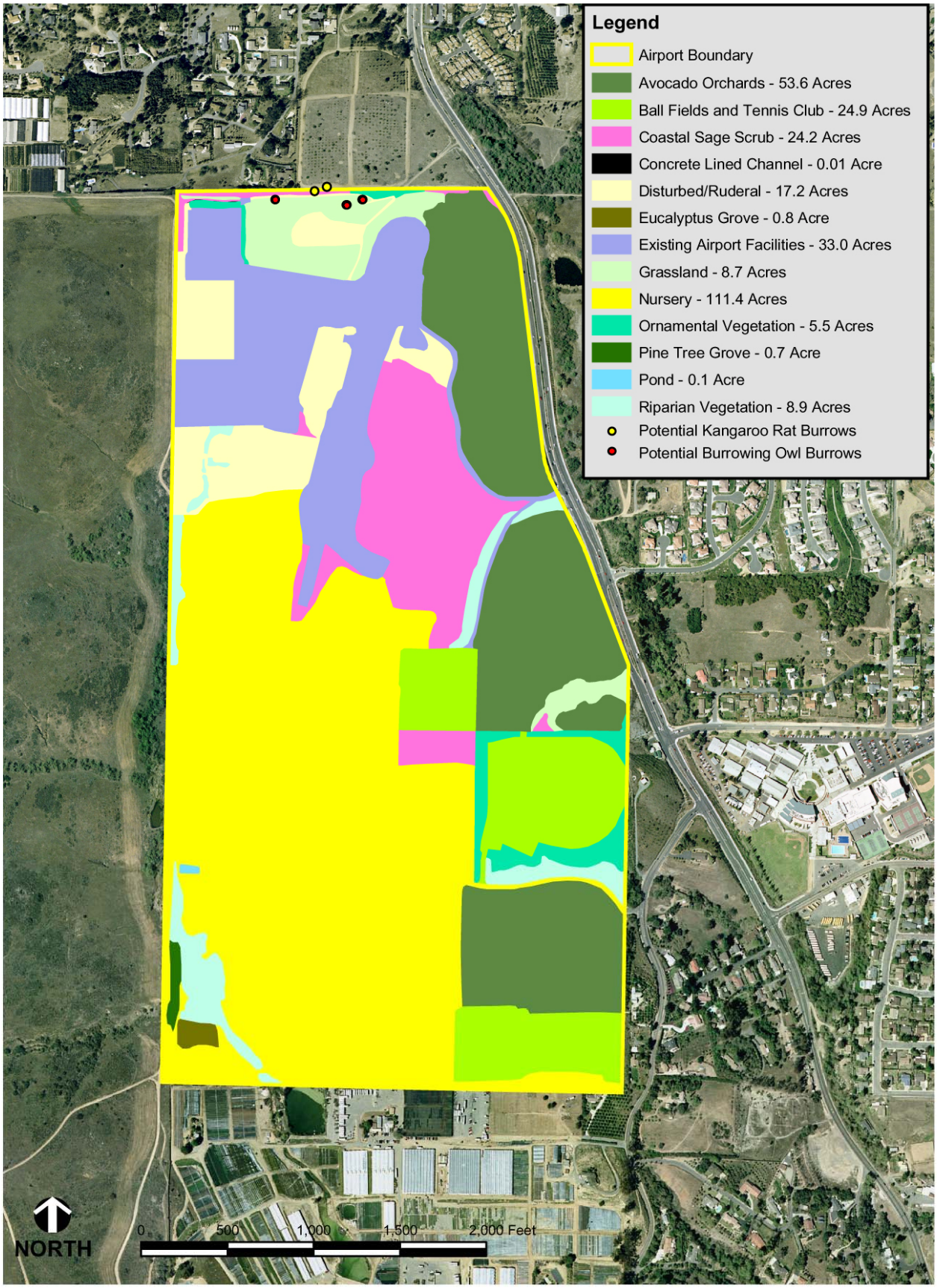
Within the airport property boundary, approximately 15 California ground squirrel burrows were located in several locations as shown on Figure 7-4. Ground squirrels, evident by the presence of fresh digging, currently occupied a number of these burrows. The western burrowing owl (BUOW; *Athene cunicularia hypugea*) is a California special concern (CSC) species that utilizes burrows as roosting and nesting sites. The burrows observed on site were located in suitable foraging habitat for BUOW, with low-growing vegetation and flat terrain. The entrance of each burrow detected was examined for signs of BUOW. These signs generally include molted feathers, cast pellets, prey remains, eggshell fragments, tracks and excrement. None of these signs were observed. It is recommended that before any ground disturbance activity for the construction of the master plan improvements, a survey be conducted not more than 30 days prior to the initiation of any construction. The purpose of that survey would be to determine if the burrows are occupied by BUOW. Burrowing owls may also use man-made structures, such as cement culverts and debris piles, and these areas should also be surveyed.

During the October 29, 2004 biological survey, a number of bird species were detected within the airport property boundary. These included red-tailed hawk, killdeer, mourning dove, greater roadrunner, Anna's hummingbird, northern flicker, Nutall's woodpecker, Cassin's kingbird, Say's phoebe, black phoebe, western scrub jay, American crow, common raven, western meadowlark, bushtit, house wren, Bewick's wren, western bluebird, blue-gray gnatcatcher, wrentit, northern mockingbird, American pipit, phainopepla, yellow-rumped warbler, common yellowthroat, song sparrow, white-crowned sparrow, spotted towhee, California towhee, red-winged blackbird, house finch and lesser goldfinch.

The vegetation and burrows on the airport property contain suitable nesting habitat for a variety of bird species. The removal of this vegetation could negatively affect breeding birds. Native California birds are covered under the Federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code, whereby all active nests (i.e., those with eggs or nestlings) are protected. To avoid the take of active bird nests, vegetation clearing and ground disturbance activities should be conducted outside of the avian breeding window (February 1 to July 31). Alternatively, a breeding bird survey could be conducted prior to ground disturbance and vegetation removal or trimming to insure that no active nests exist in the area proposed for construction. This survey should precede construction activities as closely as possible to ensure that nests are not initiated between the time of the survey and the commencement of construction activities.

Additional wildlife species observed on the airport property during the October 29, 2004 survey included Pacific tree frog, desert cottontail and ground squirrel.

Although not detected during the October 29, 2004 biological survey, suitable habitat exists on the airport property for the following California Special Concern (CSC) species: coast (San Diego) horned lizard, Coronado skink, coastal western whiptail, rufous-crowned sparrow, Bell's sage sparrow, coastal cactus wren, San Diego desert woodrat, northwestern San Diego pocket



Source: P&D Consultants (2004).

Figure 7-4
Biotic Communities

mouse and orange-throated whiptail. These species would most likely occur in the coastal sage scrub (CSS) plant community on the site, which is shown on Figure 7-4.

Endangered and Threatened Plant and Animal Species

Within the airport property boundary, suitable habitat for the federally endangered and state threatened Stephen's kangaroo rat (SKR) was present. Suitable habitat for SKR occurs in the north part of the airport property boundary and is mapped on Figure 7-4 as a grassland plant community. The short vegetation and flat to gently sloping topography in this area create suitable habitat conditions for SKR. Two potential kangaroo rat burrows were located in the grassland community as shown on Figure 7-4. Additionally, existing SKR populations are known from less than one mile to the west of the airport property boundary within Camp Pendleton (CNDDB 2004). Therefore, SKR protocol surveys (five consecutive nights) should be completed to determine the presence/absence of this species within the airport property boundary. It is not expected that a substantial population exists in the grassland plant community because only one potential kangaroo rat burrow was detected within the property fence line and one burrow immediately outside the airport fence line during the October 29, 2004 biological survey.

Coastal California gnatcatcher (CAGN; federally threatened) has been recorded in the vicinity of the Airport Property Boundary (CNDDB 2004). Although CAGN was not detected during the October 2004 biological survey, suitable habitat exists in the CSS plant community that occurs in a large patch to the east of the runway. If airport development is proposed for this area, it is recommended that protocol surveys for CAGN be conducted. Other small patches of CSS in the Airport Property Boundary are not sufficient in size to support a breeding pair of CAGN.

Least Bell's vireo (LBV; federally and state endangered) has been recorded in the vicinity of the airport property (CNDDB 2004). Suitable habitat exists for LBV in Riparian Areas 2 and 3, as shown on Figure 7-1. Riparian Area 1 may support foraging opportunities for LBV; however, the vegetation is not typical of LBV breeding habitat due to its limited width. If development is proposed for Riparian Areas 2 and 3, it is recommended that protocol surveys for LBV be conducted.

There is no suitable habitat for the southwestern willow flycatcher (federally endangered) or western yellow-billed cuckoo (state endangered) within the airport property boundary.

Plant species that are potentially present at the site (CNDDB 2004) include Jaeger's milk-vetch, Orcutt's brodiaea, Ramona horkelia, San Miguel savory, prostrate navarretia, smooth tarplant and thread-leaved brodiaea. These species are included on the California Native Plant Society (CNPS) 1B list (rare, threatened or endangered in California and elsewhere). In addition, thread-leaved brodiaea is listed as federally threatened and state endangered. Suitable habitat for these plant species would occur in the CSS plant community.

Solid Waste Impacts

Airport improvements that relate to airfield development such as runways, taxiways, and related items will not directly impact solid waste collection, control or disposal other than that associated with construction. Implementation of the master plan will not produce a substantial amount of solid waste relative to existing conditions. Solid waste generated during construction and operation of the proposed project will comply with all federal, state and local statutes and regulations to reduce and recycle solid waste.

Construction Impacts

Construction impacts are either non-substantial or non-existent. Specific efforts during construction may create impacts that are subject to local, state, or federal ordinances or regulations. For example, the Noise Element of the County's General Plan states that the only means to control construction noise and maintenance equipment is through regulation of hours of use. As discussed under noise, there are a few sensitive uses (residential uses) near the areas of construction. The construction plans should be reviewed to locate the noisiest construction activities and any stationary equipment (such as generators) as far from adjoining sensitive lands uses as feasible. The hours of construction will be in accordance with the County's General Plan and Noise Ordinance.

Induced Socioeconomic Impacts

Socioeconomic impacts are either non-substantial or non-existent because all the master plan improvements are within the airport property and no relocation of residential or commercial uses will be necessary.

Cumulative Implications

By definition under CEQA and NEPA, cumulative effects are those effects which occur when individual effects occur, which when considered together result in substantial effects. These increments can occur over a long period of time to the point where the effect is substantial (e.g. loss of critical habitat for a species). These increments can also occur over a very short period of time where the implications of one project are overlooked by another project and the effects are identified too late in the process to mitigate or avoid.

No other airport projects in the County have implications that, when considered with the effects of the proposed master plan improvements, would be substantial.

Short Term versus Long Term Implications

There are no short or long term planning or regional goals that would be adversely impacted by the proposed master plan. The master plan is the fulfillment of a long term goal regarding aviation growth in the County and surrounding area. The master plan is a part of the transportation infrastructure for the County and airport network in California. No environmental goals have been identified for which the master plan would be in conflict.

SUMMARY

Based on the findings contained in this Environmental Evaluation, additional studies are recommended related to five environmental affects (Riparian Vegetation/Potential Wetlands, Farmlands, Cultural Resources, Biotic Communities and Endangered and Threatened Plant and Animal Species), which may occur as a result of the master plan improvements.

A wetland delineation and jurisdictional determination is required in the jurisdictional riparian vegetation areas. This analysis would identify total acres of jurisdictional waters within the airport property boundary and permit requirements if any airport improvements are anticipated in the riparian vegetation areas.

An Environmental Evaluation Worksheet must be completed because part of the airport property contains Unique Farmland. This Worksheet can be completed concurrently with the NEPA and/or CEQA environmental documentation for the proposed master plan.

It is recommended that a historic and cultural resources database search be conducted to establish what, if any, archaeological, paleontological, historic or cultural resources of value may exist on the site.

Burrowing owl surveys are recommended 30 days prior to potential ground disturbance activities in the grassland community to determine their presence or absence. SKR protocol surveys (five consecutive days) are recommended to determine the presence/absence of this species in the grassland plant community within the airport property boundary if any airport improvements are proposed for this area. To avoid nesting birds, vegetation clearing activities should be conducted outside the avian breeding window (February 1 to July 31). Alternatively, a breeding bird survey could be conducted prior to vegetation removal or trimming to insure that there are no nesting birds in the identified disturbance limits.

A more detailed field survey to determine the presence of rare plants in the CSS plant community is recommended if airport improvements are proposed in these areas.

Further actions are anticipated which will require an Initial Study (IS) to be prepared pursuant to CEQA (California Public Resources Code 21000 et seq.). The IS can be prepared concurrently or jointly with the NEPA document. The NEPA and/or CEQA documentation will be prepared according to FAA and County of San Diego standards and regulations, respectively.

Chapter 8
Cost and Funding Considerations

Chapter 8
Cost and Funding Considerations

INTRODUCTION

This chapter presents financial information related to the recommended improvements of the Fallbrook Community Airpark Master Plan, as discussed in previous chapters of this report. It identifies the sequencing of costs and the financial obligations to be assumed by Federal, State, and local government. The financial data consists of two basic elements – the capital improvement costs associated with recommended development and the staging of development and improvement costs.

CAPITAL IMPROVEMENTS

The schedule of capital improvements is presented in Table 8-1. This table describes in detail the proposed investment in construction and expansion activities as called for in the Fallbrook Community Airpark Master Plan. For each of the three development phases it presents the estimated development costs and the projected timing. A summary of capital improvement costs is shown in Table 8-2.

Individual investment items comprising the development program were taken from the Airport Layout Plan. In addition, these items were based on discussions held with County and FAA representatives.

The estimated costs of capital improvements shown in Table 8-1 are stated in 2004 dollars. These costs are based on unit costs developed by P&D and also analysis of data gathered from the airport sponsor, FAA, trade publications, and experience at other airports.

The capital improvements plan is presented in the three phases consistent with those used throughout the master planning analyses. It is important to remember that the real determinant of the specific timing of demand-related improvements (capacity oriented) is the actual traffic experienced. Therefore, the schedule presented does not commit the sponsor to provide such development until traffic levels reach those projected in this study. The costs projected for each phase are divided into public and private sector portions. The public investment items outlined qualify for Federal AIP (Airport Improvement Program) and California Aid to Airports Program (CAAP) funding. All public investment construction is to be financed by the public sector.

FUNDING SOURCES

There are two grants-in-aid programs designed specifically for airport development: the FAA's Airport Improvement Program (AIP) and the State's California Aid to Airports Program (CAAP). Other funding sources are private capital, airport lease revenues, and County funds.

Table 8-1
SCHEDULE OF IMPROVEMENTS

	Project	Unit	Quantity [a]	Unit Cost [b]	Cost	Timing
	Phase 1					
	Public Investment					
1	Construct Helipad Improvements (Lighting and Wind Sock)	LS	1	$52,000	$52,000	2006
2	Obstruction Removal (Hillside Near Public Viewing Area)	CY	40,000	$9	$360,000	2006
3	Replace Segmented Circle	EA	1	$77,000	$77,000	2006
4	Design and Construct Security Fencing	LF	4,500	$51	$230,000	2006
5	Construct Transient Ramp and Taxiway	SY	14,580	$42	$618,000	2007
6	Reconstruct Taxiway Connector Between Taxiway A and Aircraft Hangar Management	SY	670	$38	$26,000	2007
7	Conduct Drainage Master Plan Study	EA	1	$100,000	$100,000	2007
8	Translate Runway 240 Feet to the South to Provide Safety Area (Runway 18), Extend Taxiway A, and Construct Runway 18 Entrance Taxiway.	LS	1	$7,086,000	$7,086,000	2008
9	Acquire Runway Protection Zone Easements	AC	0.7	$315,000	$221,000	2008
10	Upgrade Electric Vault	LS	1	$417,400	$418,000	2008
11	Construct 2 Inch Overlay on East/West Taxiway	SY	3,120	$21	$66,000	2008
	11a. Install Taxiway Edge Lights on East/West Taxiway	LF	1,100	$74	$82,000	2008
12	Install Airfield Signage	LS	1	$100,000	$100,000	2009
13	Construct Road from Mission Road to L18 Airpark Storage	LF	3,850	$442	$1,702,000	2009
	13a. Relacate Reclaimed Water Line	LF	950	$140	$133,000	2009
	13b. Construct Retaining Wall	LF	950	$315	$300,000	2009
14	Relocate Rotating Beacon	LS	1	$151,300	$152,000	2010
15	Slurry Seal Runway 18-36 and Taxiway A	SF	202,800	$1	$203,000	2010
	Total Public Investment - Phase 1				**$11,926,000**	
	Private Investment					
1	Construct 47 based aircraft tie-downs	SY	20,300	$41	$832,000	2010
	1a. Extend road to based aircraft apron	LF	150	$342	$51,000	2010
	Total Private Investment - Phase 1				**$883,000**	
	Total Investment - Phase 1 (2006-2010)				**$12,809,000**	

Table 8-1
SCHEDULE OF IMPROVEMENTS
(continued)

	Project	Unit	Quantity [a]	Unit Cost [b]	Cost	Timing
	Phase 2					
	Public Investment					
1	Construct Diagonal Taxiway	SY	3,300	$32	$106,000	2011
	1a. Install Taxiway Edge Lights on Diagonal Taxiway	LF	970	$74	$72,000	2011
	1b. Construct Drainage Improvements on diagonal Taxiway	LS	1	$46,000	$46,000	2011
2	Slurry Seal Pavements Constructed in 2007	SF	104,100	$1	$105,000	2011
3	Construct General Aviation Termina/Airport Administration Building	SF	2,600	$167	$435,000	2011
	3a. Construct Transient Ramp	SY	622	$41	$26,000	2011
	3b. Construct Vehicle Parking	SY	2,600	$40	$104,000	2011
	3c. Construct Utilities and Drainage	LS	1	$111,000	$111,000	2011
	3d. Construct Wash Rack	LS	1	$41,000	$41,000	2011
4	Slurry Seal East/West Taxiway	SF	131,220	$1	$132,000	2012
5	Slurry Seal Runway 18-36 and Taxiway A	SF	202,800	$1	$203,000	2014
6	Slurry Seal Helipad Area, Taxiway Connector, Diagonal Taxiway, and Transient Ramp	SF	205,200	$1	$206,000	2015
	Total Public Investment - Phase 2				**$1,587,000**	
	Private Investment					
1	Construct 6 Based Aircraft Tie-Downs	SF	8,500	$41	$349,000	2013
	1a. Extend Road	LF	1,100	$442	$487,000	2013
	1b. Relocate Reclaimed Water Line	LF	1,100	$140	$154,000	2013
	1c. Construct Retaining Wall	LF	1,100	$315	$347,000	2013
2	Slurry Seal 47 Based Aircraft Tie-Downs Constructed in 2010	SY	182,700	$1	$183,000	2014
3	Construct Aircraft Maintenance Hangar Utilities	LS	1	$42,000	$42,000	2014
	3a. Construct Aircraft Mmaintenance Hangar	SF	5,000	$46	$230,000	2014
	Total Private Investment - Phase 2				**$1,792,000**	
	Total Investment - Phase 2 (2011-2015)				**$3,379,000**	

Table 8-1
SCHEDULE OF IMPROVEMENTS
(continued)

	Project	Unit	Quantity [a]	Unit Cost [b]	Cost	Timing
	Phase 3					
	Public Investment					
1	Slurry Seal East/West Taxiway	LS	3	$50,000	$150,000	2016, 2020, 2024
2	Slurry Seal Runway 18-36 and Taxiway A	LS	2	$203,000	$406,000	2018, 2022
3	Slurry Seal Helipad Area, Taxiway Connector, Diagonal Taxiway, and Transient Ramp	LS	2	$256,000	$512,000	2019, 2023
4	Install REIL (Runway 36)	LS	1	$68,000	$68,000	Long-Term
5	Develop GPS Approach Procedure (Runway 36)	EA	1	$20,000	$20,000	Long-Term
6	Construct 8 Transient Aircraft Tie-Downs	SY	800	$41	$33,000	Long-Term
7	Construct Airport Maintenance Facility	SF	2,500	$30	$75,000	Long-Term
	7a. Construct Airport Maintenance Facility Utilities	LS	1	$31,000	$31,000	Long-Term
	7b. Construct Airport Maintenance Facility Parking	SY	1,200	$40	$48,000	Long-Term
8	Connect Road to Tennis Club Access Road	LF	3,300	$442	$1,459,000	Long-Term
	8a. Relocate Reclaimed Water Line	LF	3,300	$140	$462,000	Long-Term
	8b. Construct Retaining Wall	LF	1,250	$315	$394,000	Long-Term
9	Improve Access Road to Helipad	LF	520	$342	$178,000	Long-Term
	Total Public Investment - Phase 3				**$3,836,000**	
	Private Investment					
1	Slurry Based Aircraft Apron Constructed in 2013	LS	3	$9,000	$26,000	2017, 2021, 2025
2	Slurry Seal 47 Based Aircraft Tie-Downs Constructed in 2010	LS	2	$183,000	$366,000	2018, 2022
3	Construct 7 T-Hangars	SF	12,915	$46	$595,000	Long-Term
	3a. Construct Hangar Utilities and Drainage	LS	1	$115,000	$115,000	Long-Term
	3b. Construct Hangar Apron	SY	1,435	$32	$46,000	Long-Term
4	Construct 30 Based Aircraft Tie-Downs	SY	7,500	$41	$308,000	Long-Term
	Total Private Investment - Phase 3				**$1,456,000**	
	Total Investment - Phase 3 (2016-2025)				**$5,292,000**	
	Total Investment - All Phases				**$21,480,000**	

Source: P&D Aviation

[a] SF = square feet; EA = each; LF = linear feet; CY = cubic yards; SY = square yards; LS = lump sum; AC = acres

[b] Unit costs include 20% contingency, 25% A/E/CM fees, and 7% mobilization fees and have been rounded.

[c] Project cost taken from 2003 Airport Capital Improvement Plan, provided by County of San Diego.

Table 8-2
SUMMARY OF CAPITAL IMPROVEMENT COSTS
(2004 Dollars)

Timing	Public Investment	Private Investment	Total Investment
Phase 1	$1,926,000	$883,000	$12,809,000
Phase 2	$1,587,000	$1,792,000	$3,379,000
Phase 3	$3,836,000	$1,456,000	$5,292,000
Total Plan	**$17,349,000**	**$4,131,000**	**$21,480,000**

Source: P&D Aviation analysis.

FAA Airport Improvement Program (AIP)

On the federal level, the FAA's Aid to Airports Program provides funding for planning, construction, or rehabilitation at any airport. The current grant program, known as the AIP, was established by the Airport and Airway Improvement Act of 1982 and amended most recently in 2003 by the Vision 100 – Century of Aviation Reauthorization Act. The AIP provides funding through fiscal year (FY) 2007 from the Airport and Airway Trust Fund for airport development, airport planning, noise compatibility planning, and to carrying out noise compatibility programs.

The Trust Fund provides the revenues used to fund AIP projects. The Trust Fund concept guarantees a stable funding source whereby users pay for the services they receive. Taxes or user fees are collected from various segments of the aviation community and placed in the Trust Fund. These taxes include a 7.5 percent tax on airline tickets, a 6.25 percent tax on freight waybills, a $12 international departure fee, a $.193 and $.218 per gallon tax on general aviation gasoline and jet fuel, respectively.

The Airport and Airway Improvement Act of 1982, as amended, authorized the use of monies from the Airport and Airway Trust Fund to make grants under the Airport Improvement Program through fiscal year 2007, which ends on September 30, 2007. The following amounts are authorized for the AIP:

Year	Authorization Amount (Millions of Dollars)
2004	$3,400
2005	$3,500
2006	$3,600
2007	$3,700

Reauthorization will be necessary for funding after 2007.

Under the Act, the authorization for funds not obligated in a fiscal year carries forward to future fiscal years unless the Congress takes specific action to limit such amounts. During the annual appropriations process, Congress may also limit the funding for grants to an amount that differs from the above authorization.

Projects eligible for AIP funding consist of: capital outlays for land acquisition; site preparation; construction, alteration, and repair of runways, taxiways, aircraft parking aprons, and roads within airport boundaries (except for access to areas providing revenue, such as parking lots and aviation industrial areas); construction and installation of lighting, utilities, navigational aids, and aviation-related

weather reporting equipment and safety equipment required for certification of an airport facility; security equipment required of the sponsor by the Secretary of Transportation; limited terminal development at commercial service airports; and equipment to measure runway surface tension. Grants may ***not*** be made for the construction of hangars, automobile parking facilities, buildings not related to the safety of persons in the airport, landscaping or art work, or routine maintenance and repair. Technical advisory services are also provided.

The Airport Improvement Program provides a maximum federal share of 95 percent for all eligible projects at Fallbrook Community Airpark. Because of the large number of projects competing for AIP funds, not all eligible projects can be funded.

In fiscal year 2004, $77,763,000 in AIP funds was granted to 84 general aviation and reliever airports in the State of California. This amount included non-primary entitlements that general aviation airports can receive. General aviation airports may be publicly or privately-owned to receive AIP grants, but must be included in the National Plan of Integrated Airport Systems (NPIAS). There are presently 162 general aviation and reliever airports in the State that are contained in the current NPIAS and which compete for the AIP funds. Although an average of $480,000 in AIP grant funds was available for each general aviation airport in 2004 only 84 GA and reliever airports actually received grants. Proposed grant projects must compete with all other projects in the State on the basis of need. The average grant for the 84 GA airports in 2004 was $925,700.

The funds for AIP are distributed in accordance with provisions contained in the 1982 Act.

California Aid to Airports Program (CAAP)

The CAAP provides three types of grant funding: annual grants, acquisition and development grants (A&D), and a portion of the non-federal portion of FAA AIP grants (AIP Match).

The annual grants are used to fund pre-approved, eligible projects and/or operations and maintenance of public-use general aviation airports (commercial service and reliever airports are not eligible). The funds are a fixed amount of $10,000 annually and may be accrued for a maximum of five years with no matching requirements. Grants can be used for airport and aviation services such as marking systems, fencing, lighting, navigation aids, land acquisition, parking and tie downs, noise monitoring, and obstruction/hazard removal. Funds can also be used for servicing of general obligation or revenue bonds issued to finance airport capital improvements and for operation and maintenance purposes. They may also be used as the local match for a federal grant.

Acquisition and development grants provide discretionary funds for airport projects included in the adopted State Capital Improvement Program (CIP). The CIP is an element of the California Aviation System Plan (CASP). Inclusion in the CIP is a prerequisite for a project being considered for either an A&D grant or an AIP matching grant, and projects are selected for A&D grants from the CIP. In prioritizing project submittals, the Aeronautics Program uses the "STIP Project Evaluation Matrix" and an Airport Rating form.

Acquisition and development grants can be used to fund any capital improvements on an airport and for aviation purposes with runway maintenance projects receiving the highest priority for funding. Additionally, funds can be used for servicing general obligation or revenue bonds issued to finance airport capital improvements and for the local matching portions of Federal Airport Improvement Program grants. Funds cannot be used for operations or maintenance. Grants range from $10,000 to $500,000, but new grants are limited to less than $100,000.

Total acquisition and development grant funding was $1 million in fiscal year 2003 for two grants (an average of $500,000). Funding for acquisition and development grants are limited to completing the projects from the 2000 program.

The California Transportation Commission annually established a local matching requirement which ranges from 10 to 50 percent of the non-Federal funded portion of the project cost. Since 1977/78, recipients have provided a minimum match of 10 percent of eligible project costs for acquisition and development projects.

A third type of grant became effective October 1, 1994 and relates to AIP projects funded after this date. As explained previously, FAA AIP grants typically covered 90 percent of eligible project costs for general aviation airports, which prior to October 1, 1994 left 10 percent of the project costs to be borne by the airport sponsor. These state grants will provide five percent of the FAA grant to be used as part of the sponsor's matching share. This translates into 4.5 percent of typical project costs, which reduces the sponsor's matching share to 5.5 percent. However, the reauthorization Vision 100, FAA AIP grants will cover 95 percent of the eligible project costs. No change is anticipated to the current state AIP match program. Therefore, it is technically possible that the sponsor's matching share be as low as 0.5 percent. However, since it is expected that a total of $2.5 million will be available for these grants for the next three fiscal years to be used for each FAA grant to GA airports, it would not be practical to assume that Fallbrook would receive the maximum state match that is technically possible. If it is assumed that the $2.5 million that is available for the program is used for an average of 80 FAA AIP grants a year, an average state match of $31,250 per grant results. For planning purposes, this amount will be assumed as the probable maximum state participation in a FAA AIP project.

In addition to grants-in-aid, the CAAP provides financial assistance in the form of low interest loans, repayable over a period not to exceed 25 years. Two types of loans are available: Revenue Generating Loans and Matching Funds loans. The interest rate for these loans is based on the most recent issue of State of California bonds sold prior to approval of the loan.

Funds from Revenue Generating Loans may be used for any projects not eligible for funding under other programs and which are designed to improve airport self-sufficiency. Loans of this type cannot be used for 'land banks,' automobile access roads and auto parking facilities to accommodate airlines. The loan amounts are based upon an analysis of each individual application, after a public hearing is held, and subject to availability of funds. Matching fund loans may be used for securing Federal AIP grants, and the loan amount equals the sponsor's share (5.5 percent) of project costs required to match a federal grant. Requests for matching fund loans are given highest priority. Total loan funding in fiscal year 2003 was $1 million. If funds allocated to the loan program are not used in one year they are rolled over into the next fiscal year. Available funding is dependent upon payments made, interest earned, and early payoffs.

Private Capital

Private funding is often available for certain airport improvements, including aircraft hangar construction. It is assumed that future hangars at the airport will be constructed with private funds on property leased from the airport on a long-term basis. At the end of the lease period, the ownership of the hangars would revert to the airport.

Airport Revenues and County Funds

In the past the airport has generated revenue through non-aviation leases, aviation leases and miscellaneous (mainly special events and tie down fees) sources. Net revenues for FY 2003 were $194,000. As a net revenue source for the County, the County can be used to fund some of the capital improvements.

Project Cost Shares

Total public investment is estimated to equal $17.3 million, in 2004 dollars, for all three phases of the planning period. When including private investment items, projects not eligible for federal or state funding assistance, the total development program costs will equal $21.5 million in 2004 dollars.

Table 8-3 presents the capital budget, in which an analysis of the public investment construction costs in the three planning periods is provided. The table totals each year's expenditures in current (2004) dollars, and then calculates the approximate AIP, CAAP, and local funding requirements, also in current dollars. Federal assistance will be in the form of Discretionary funds of the AIP and based on current legislation, AIP will cover 95 percent of eligible costs of the public investment. It has been assumed the State's participation in eligible projects equals 4.5 percent of the FAA grant up to an estimated maximum matching amount of $31,250 as previously explained.

Total Federal, state, and local government funding for capital improvements over all three phases of the master plan is estimated, in current dollars, to be:

- Federal AIP Funding - $16.5 million
- State Funding - $413,340
- County Funding - $454,110

The requirement for County funds represents approximately 2.6 percent of public investment.

Over the course of the 20-year planning period, the average annual requirement for County funding of all public capital improvements is approximately $22,700.

Private investment in capital improvements over the course of the planning period was previously itemized in Table 8-1. Total private investment in the airport is estimated to total $4.1 million, in current dollars 2004 dollars, and represents projects ineligible for FAA funding. For the most part these costs include development of apron areas for tie-downs, road construction, aircraft maintenance hangar, and based aircraft hangars recommended in the plan. The private investment can be provided by private sources, or the County could elect to fund projects, such as hangars, out of the County's own funds.

Table 8-3
CAPITAL BUDGET – ANNUAL PUBLIC INVESTMENT

	Project	Timing	Cost	Estimated FAA Funds	Estimated State Funds	Estimated County Funds
			Phase 1			
1	Construct Helipad Improvements (Lighting and Wind Sock)	2006	$52,000	$49,400	$2,340	$260
2	Obstruction Removal (Hillside Near Public Viewing Area)	2006	$360,000	$342,000	$16,200	$1,800
3	Replace Segmented Circle	2006	$77,000	$73,150	$3,465	$385
4	Design and Construct Security Fencing	2006	$230,000	$218,500	$10,350	$1,150
5	Construct Transient Ramp and Taxiway	2007	$618,000	$587,100	$27,810	$3,090
6	Reconstruct Taxiway Connector Between Taxiway A and Aircraft Hangar Management	2007	$26,000	$24,700	$1,170	$130
7	Conduct Drainage Master Plan Study	2007	$100,000	$95,000	$4,500	$500
8	Translate Runway 240 Feet to the South to Provide Safety Area (Runway 18), Extend Taxiway A, and Construct Runway 18 Entrance Taxiway.	2008	$7,086,000	$6,731,700	$31,250	$323,050
9	Acquire Runway Protection Zone Easements	2008	$221,000	$209,950	$9,945	$1,105
10	Upgrade Electric Vault	2008	$418,000	$397,100	$18,810	$2,090
11	Construct 2 Inch Overlay on East/West Taxiway	2008	$66,000	$62,700	$2,970	$330
	11a. Install Taxiway Edge Lights on East/West Taxiway	2008	$82,000	$77,900	$3,690	$410
12	Install Airfield Signage	2009	$100,000	$95,000	$4,500	$500
13	Construct Road from Mission Road to L18 Airpark Storage	2009	$1,702,000	$1,616,900	$31,250	$53,850
	13a. Relacate Reclaimed Water Line	2009	$133,000	$126,350	$5,985	$665
	13b. Construct Retaining Wall	2009	$300,000	$285,000	$13,500	$1,500
14	Relocate Rotating Beacon	2010	$152,000	$144,400	$6,840	$760
15	Slurry Seal Runway 18-36 and Taxiway A	2010	$203,000	$192,850	$9,135	$1,015
	Total Public Investment - Phase 1		**$11,926,000**	**$11,329,700**	**$203,710**	**$392,590**

Note: A maximum state matching amount of $31,250 has been assumed for each project eligible for FAA AIP.

Table 8-3
CAPITAL BUDGET – ANNUAL PUBLIC INVESTMENT
(continued)

	Project	Timing	Cost	Estimated FAA Funds	Estimated State Funds	Estimated County Funds
			Phase 2			
1	Construct Diagonal Taxiway	2011	$106,000	$100,700	$4,770	$530
	1a. Install Taxiway Edge Lights on Diagonal Taxiway	2011	$72,000	$68,400	$3,240	$360
	1b. Construct Drainage Improvements on diagonal Taxiway	2011	$46,000	$43,700	$2,070	$230
2	Slurry Seal Pavements Constructed in 2007	2011	$105,000	$99,750	$4,725	$525
3	Construct General Aviation Termina/Airport Administration Building	2011	$435,000	$413,250	$19,575	$2,175
	3a. Construct Transient Ramp	2011	$26,000	$24,700	$1,170	$130
	3b. Construct Vehicle Parking	2011	$104,000	$98,800	$4,680	$520
	3c. Construct Utilities and Drainage	2011	$111,000	$105,450	$4,995	$555
	3d. Construct Wash Rack	2011	$41,000	$38,950	$1,845	$205
4	Slurry Seal East/West Taxiway	2012	$132,000	$125,400	$5,940	$660
5	Slurry Seal Runway 18-36 and Taxiway A	2014	$203,000	$192,850	$9,135	$1,015
6	Slurry Seal Helipad Area, Taxiway Connector, Diagonal Taxiway, and Transient Ramp	2015	$206,000	$195,700	$9,270	$1,030
	Total Public Investment - Phase 2		**$1,587,000**	**$1,507,650**	**$71,415**	**$7,935**

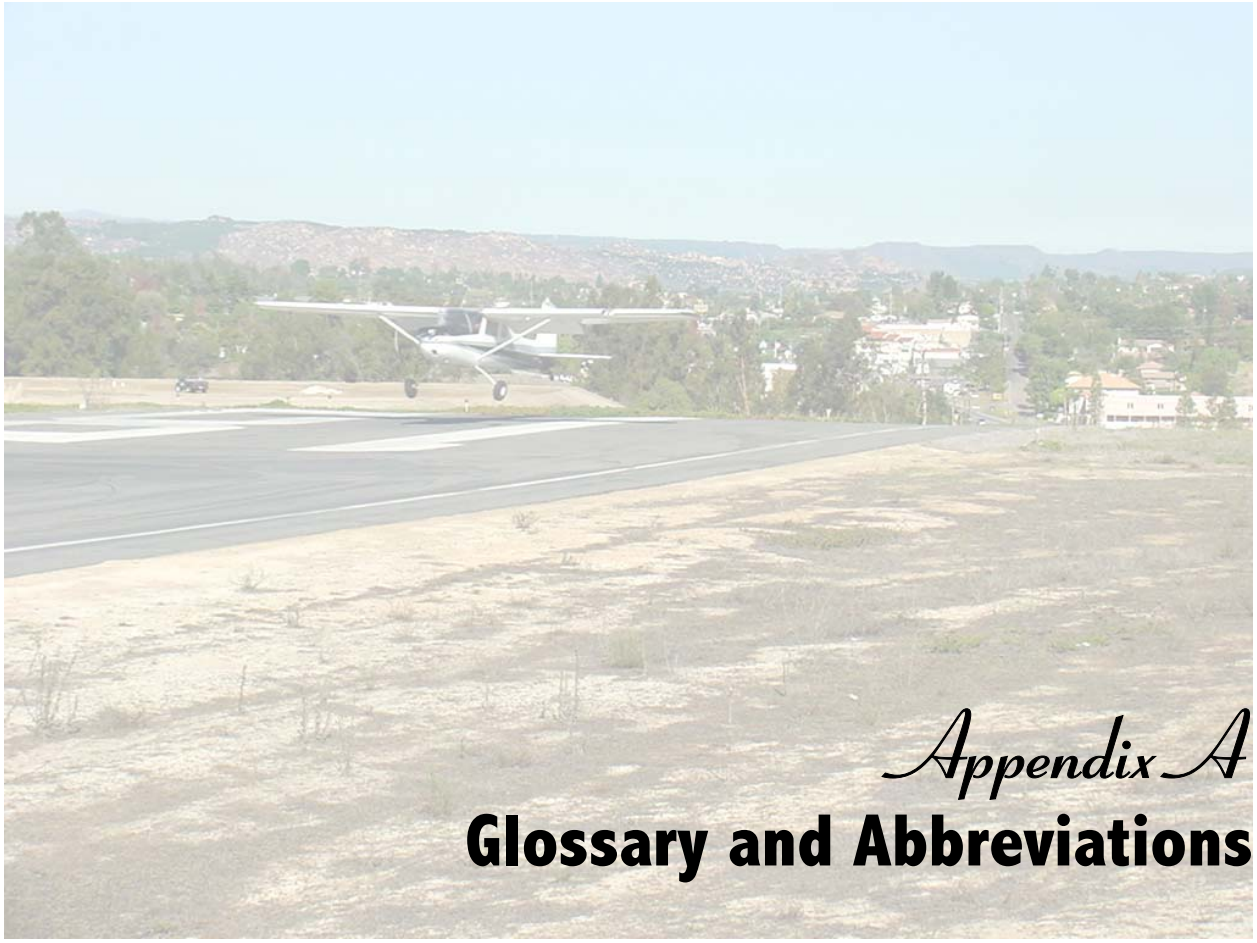
Note: A maximum state matching amount of $31,250 has been assumed for each project eligible for FAA AIP.

Table 8-3
CAPITAL BUDGET – ANNUAL PUBLIC INVESTMENT
(continued)

	Project	Timing	Cost	Estimated FAA Funds	Estimated State Funds	Estimated County Funds
	Phase 3					
1	Slurry Seal East/West Taxiway	2016, 2020, 2024	$150,000	$142,500	$6,750	$750
2	Slurry Seal Runway 18-36 and Taxiway A	2018, 2022	$406,000	$385,700	$18,270	$2,030
3	Slurry Seal Helipad Area, Taxiway Connector, Diagonal Taxiway, and Transient Ramp	2019, 2023	$512,000	$486,400	$23,040	$2,560
4	Install REIL (Runway 36)	Long-Term	$68,000	$64,600	$3,060	$340
5	Develop GPS Approach Procedure (Runway 36)	Long-Term	$20,000	$19,000	$900	$100
6	Construct 8 Transient Aircraft Tie-Downs	Long-Term	$33,000	$31,350	$1,485	$165
7	Construct Airport Maintenance Facility	Long-Term	$75,000	$71,250	$3,375	$375
	7a. Construct Airport Maintenance Facility Utilities	Long-Term	$31,000	$29,450	$1,395	$155
	7b. Construct Airport Maintenance Facility Parking	Long-Term	$48,000	$45,600	$2,160	$240
8	Connect Road to Tennis Club Access Road	Long-Term	$1,459,000	$1,386,050	$31,250	$41,700
	8a. Relocate Reclaimed Water Line	Long-Term	$462,000	$438,900	$20,790	$2,310
	8b. Construct Retaining Wall	Long-Term	$394,000	$374,300	$17,730	$1,970
9	Improve Access Road to Helipad	Long-Term	$178,000	$169,100	$8,010	$890
	Total Public Investment - Phase 3		**$3,836,000**	**$3,644,200**	**$138,215**	**$53,585**
	TOTAL PUBLIC INVESTMENT - ALL PHASES		**$17,349,000**	**$16,481,550**	**$413,340**	**$454,110**

Note: A maximum state matching amount of $31,250 has been assumed for each project eligible for FAA AIP.

Source: P&D Aviation



Appendix A

Glossary and Abbreviations

Appendix A
Glossary and Abbreviations

A

A-WEIGHTED SOUND LEVEL - The sound pressure level which has been filtered or weighted to reduce the influence of low and high frequency (dBA).

AC - Advisory Circular published by the Federal Aviation Administration.

ACCOM. - Accommodations

ADPM - Average Day of the Peak Month

AFB - Air Force Base

AIA - Annual Instrument Approaches

AICUZ - Air Installation Compatible Use Zones define areas of compatible land use around military airfields.

AIR CARRIER - A commercial scheduled service airline carrying interregional traffic.

AIRCRAFT MIX - The relative percentage of operations conducted at an airport by each of four classes of aircraft differentiated by gross takeoff weight and number of engines.

AIRCRAFT TYPES - An arbitrary classification system which identifies and groups aircraft having similar operational characteristics for the purpose of computing runway capacity.

AIR NAVIGATIONAL FACILITY (NAVAID) - Any facility used for guiding or controlling flight in the air or during the landing or takeoff of aircraft.

AIR ROUTE SURVEILLANCE RADAR (ARSR) - Long-range radar which increases the capability of air traffic control for handling heavy enroute traffic. An ARSR site is usually located at some distance from the ARTCC it serves. Its range is approximately 200 nautical miles. Also called ATC Center Radar.

AIR TAXI - Aircraft operated by a company or individual that performs air transportation on a non-scheduled basis over unspecified routes usually with light aircraft.

AIRPORT AVAILABLE FOR PUBLIC USE - An airport available for use by the public with or without a prior request.

ALP - Airport Layout Plan

ALSF-1 - Approach Light System with Sequence Flasher Lights.

AGL - Above Ground Level

ALS - Approach Light System

AMBIENT NOISE - All encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far.

ANCLUC - Airport Noise and Compatible Land Use Control plan; an FAA sponsored land use compatibility planning program preceding Part 150 Airport Noise Compatibility Program.

APPROACH CONTROL SERVICE - Air traffic control service provided by a terminal area traffic control facility for arriving and departing IFR aircraft and, on occasion, VFR aircraft.

APPROACH FIX - The point from or over which final approach (IFR) to an airport is executed.

APPROACH SLOPE - Imaginary areas extending out and away from the approach ends of runways which are to be kept clear of obstructions.

APPROACH SURFACE - An element of the airport imaginary surfaces, longitudinally centered on the extended runway centerline, extending upward and outward from the end of the primary surface at a designated slope.

AREA NAVIGATION(RNAV) - A method of navigation that permits aircraft operations on any desired course within the coverage or stationed-reference navigation systems or within the limits of self-contained system capability.

ARTS-III - Automated Radar Terminal Service - Phase III. A terminal facility in the air traffic control system using air ground communications and radar intelligence to detect and display pertinent data such as flight identification, altitude and position of aircraft operating in the terminal area.

ASDE - Airport Surface Detection Equipment

ASV - Annual Service Volume - a reasonable estimate of the airfield's annual capacity.

ATCT - Airport Traffic Control Tower

ATC - Air Traffic Control

AVIGATION AND HAZARD EASEMENT - An easement which provides right of flight at any altitude above the approach surface, prevents any obstruction above the approach surface, provides a right to cause noise vibrations, prohibits the creation of electrical interferences, and grants right-of-way entry to remove trees or structures above the approach surface.

B

BASED AIRCRAFT - An aircraft permanently stationed at the airport, usually by some form of agreement between the aircraft owner and airport management.

BIT - Bituminous Asphalt Pavement

BUSINESS JET - Any of a type of turbine powered aircraft carrying six or more passengers and weighing less than approximately 90,000 pounds gross takeoff weight.

C

CY - Calendar Year

CARGO - Originating and/or terminating.

CAT I - Category I Instrument Landing System. (Minimums: decision height of 200 feet; Runway visual range 1,800 feet).

CAT II - Category II Instrument Landing System. (Minimums: decision height of 100 feet; Runway visual range 1,200 feet).

CAT III - Category III Instrument Landing System. (Minimums: no decision height; Runway visual range of from 0 to 700 feet depending on type of CAT III facility).

CALIBRATION - The procedure used to adjust an urban area traffic model so that it matches base year of present day conditions.

CAPACITY - The maximum number of vehicles which have a reasonable expectation of passing over a given section of a lane or a roadway during a given period under a specified speed or level of service.

CAPACITY MANUAL - Special Report 87 published by the Highway Research Board (now Transportation Research Board). Current issue is 1985.

CAPACITY RESTRAINT - See Trip Assignment.

CENTER'S AREA - The specified airspace within which an air route traffic control center provides air traffic control and advisory service.

CFR - Crash, Fire and Rescue. This is now called Airport Rescue and Fire Fighting (ARFF).

CIRCLING APPROACH - A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in instrument approach is not possible. This maneuver requires ATC clearance and that the pilot establish visual reference to the airport.

CL - Centerline

CNEL - Community Noise Equivalent Level - a noise metric used in California to describe the overall noise environment of a given area from a variety of sources.

COLLECTOR - A roadway with no control of access providing movement between residential areas and the arterial system.

COMM. - Communications

COMMERCIAL SERVICE AIRPORT - A public airport which received scheduled passenger service and enplanes annually 2,500 or more passengers.

COMMUTER AIRLINE - Aircraft operated by an airline that performs scheduled air transportation service over specified routes using aircraft with 60 seats or less.

CONC. - Portland Cement Concrete Pavement

CONICAL SURFACE - An imaginary surface extending upward and outward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONNECTION - A passenger who boards an aircraft directly after deplaning from another flight. On-line single carrier connections involve flights of the same carrier, while interline or off-line connections involve flights of two different carriers. This term can also be applied to freight shipments.

CONTROLLED AREA - Airspace within which some or all aircraft may be subject to air traffic control.

CONTROL TOWER - A central operations facility in the terminal air traffic control system consisting of a tower cab structure (including an associated IFR room if radar equipped) using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

CONTROL ZONES - These are areas of controlled airspace which extend upward from the surface and terminate at the base of the continental control area. Control zones that do not underlie the continental control area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of 5 statute miles of any extensions necessary to include instrument departure and arrival paths.

CONTROLLED AIRSPACE - An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification, Class A, Class B, etc.

CORRIDOR - A swath of area surrounding a proposed facility that encompasses all the possible locations for that facility that would still serve the originally intended purpose for that facility.

CRITICAL LANE VOLUME ANALYSIS - A short-cut technique for relating the level of service at intersections to traffic volumes in the "critical lane."

CROSSWIND RUNWAY - A runway aligned at an angle to the prevailing wind which allows use of an airport when crosswind conditions on the primary runway would otherwise restrict use.

CURFEW - A restriction placed upon all or certain classes of aircraft by time of day, for purposes of reducing or controlling airport noise.

CYCLE - The time period required for one complete sequence of signal indications .

D

DECISION HEIGHT (DH) - With respect to the operation of aircraft, this means the height at which a decision must be made, using an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

DEMAND - The actual number of persons, aircraft or vehicles currently using a facility if that facility is operating at or below capacity or the number of persons, aircraft or vehicles who want to use the facility when the facility is operating above capacity.

DEPLANEMENT - Any passenger getting off an arriving aircraft at an airport. Can be both a terminating and connecting passenger. Also applies to freight shipments.

DESIGN HOUR VOLUME (DHV) - The number of vehicles expected to use a road section, intersection, etc. in the design hour, which is usually the 30th highest hour of the year for commuter roads, the 150th highest hour for recreational roads, twice the average for shopping center facilities, etc.

DESIGN SPEED - The maximum safe speed for which the various physical features of the roadway were designed.

DISTANCE MEASURING EQUIPMENT (DME) - An electronic installation established with either a VOR or ILS to provide distance information from the facility to pilots by reception of electronic signals. It measures, in nautical miles, the distance of an aircraft from a NAVAID.

DIRECTIONAL SPLIT - The proportional distribution between access and egress flows of traffic into and out of a development or between opposite flows of traffic on two-way streets or highways.

DPW - Department of Public Works

E

ENPLANEMENT - Any passenger boarding a departing aircraft at an airport. Can be both a local origin and a connecting passenger. Applies also to freight shipments.

ENROUTE - The route of flight from point of departure to point of destination, including intermediate stops (excludes local operations).

ENROUTE AIRSPACE - Controlled airspace above and/or adjacent to terminal airspace.

EQUIVALENT SOUND LEVEL (LEQ) - The steady A-weighted sound level over a specified period that has the same acoustic energy as the fluctuating noise during that period.

EXPRESSWAY - A divided highway for through traffic with full or partial control of access generally using grade separated interchanges and some well spaced at-grade intersections.

F

F&E - Facilities and Equipment Programming - FAA

FAA - Federal Aviation Administration of the United States Department of Transportation

FAR - Federal Aviation Regulation

FAR Part 36 - A regulation establishing noise certification standards for aircraft.

FAR Part 77 - A regulation establishing standards for determining obstructions to navigable airspace.

FAR Part 150 - A regulation establishing criteria for noise assessment and procedures and criteria for FAA approval of noise compatibility programs.

FBO - Fixed Base Operator

FEDERAL AIRWAYS - See Low Altitude Airways.

FINAL APPROACH IFR - The flight plan of landing aircraft in the direction of landing along the extended runway centerline from the base leg to the runway.

FLEET MIX - The proportion of aircraft types or models expected to operate at an airport.

FLIGHT SERVICE STATION (FSS) - A facility operated by the FAA to provide flight assistance service.

FREEWAY - A divided highway for through traffic with full control of access at grade separated interchanges.

FY - Fiscal Year

G

GA - General Aviation - Refers to all civil aircraft and operations which are not classified as air carrier.

GENERATION - See trip generation.

GLIDE SLOPE (GS) - The vertical guidance component of an Instrument Landing System (ILS).

GND CON. - Ground Control

GPS - Global Positioning System.

GRAVITY MODEL - Newton's Law of Gravitation used to simulate traffic movements by distributing trips among zonal pairs in direct proportion to the number of trips originating in those zones and in inverse proportion to a measure of the spatial separation between the zones, such as travel time.

H

HGRS. - Hangars

HIGH ALTITUDE AIRWAYS - See Jet Routes.

HIRL - High Intensity Runway Lighting

HOLDING - A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

HORIZONTAL SURFACE - An imaginary surface constituting a horizontal plane 150 feet above the airport elevation.

I

IFR - Instrument Flight Rules that govern flight procedures under IFR conditions (limited visibility or other operational constraints).

IMAGINARY SURFACE - An area established in relation to the airport and to each runway consistent with FAR Part 77 in which any object extending above these imaginary surfaces is, by definition, an obstruction.

INDUCED TRIPS - See Trip.

INSTRUMENT APPROACH - A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the intial approach to a landing or to a point from which a landing may be made visually.

INSTRUMENT LANDING SYSTEM (ILS) - A precision landing aid consisting of localizer (azimuth guidance), glide slope (vertical guidance), outer marker (final approach fix) and approach light system.

INSTRUMENT OPERATION - A landing or takeoff conducted while operating on an instrument flight plan.

INSTRUMENT RUNWAY - A runway equipped with electronic and visual navigation aids for which a precision or non-precision approach procedure having straight-in landing minimums has been established.

INTEGRATED NOISE MODEL (INM) - A computer-based airport noise exposure modelling program.

ISOPLETH - A line on a map connecting points at which a given variable (ground travel time) has a specified constant value.

ITINERANT OPERATIONS - All aircraft arrivals and departures other than local operations.

INTERNATIONAL OPERATIONS - Aircraft operations performed by air carriers engaged in scheduled international service.

J

JET ROUTES - A route designed to serve aircraft operating from 18,000 feet MSL up to and including flight level 450.

L

L18 – Three letter identifier for Fallbrook Community Airpark.

LAT - Latitude

LDA - Localizer Type Directional Aid

LDN - Day-Night Average Sound Level. The 24-hour average sound level, in decibels, from midnight to midnight, obtained after the addition of ten decibels to sound levels for periods between 10 p.m. and 7 a.m.

LDNG. AIDS - Landing Aids

LENGTH OF HAUL - The non-stop airline route distance from a particular airport.

LEVEL OF SERVICE - An arbitrary but standardized index of the relative service provided by a transportation facility.

LIRL - Low Intensity Runway Lighting

LOAD FACTOR - Ratio of the number of passenger miles to the available seat miles flown by an airline representing the proportion of aircraft seating capacity that is actually sold and utilized. Load factors are also referred to in air cargo and can be determined by weight or volume.

LOC - Localizer (part of a ILS)

LOCAL OPERATION - Operations performed by aircraft which: (a) operate in the local traffic pattern or within the sight of the tower; (b) are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the control tower, or (c) execute simulated instrument approaches or low passes at the airport.

LOM - Compass locator at an outer marker (part of an ILS). Also call COMLO.

LONG - Longitude

LOW ALTITUDE AIRWAYS - Air routes below 18,000 feet MSL. They are referred to as Federal Airways.

LRR - Long-Range Radar

M

MALS - Medium Intensity Approach Light System

MALSF - Medium Intensity Approach Light System with sequence flashing lights.

MALSR - MALS with Runway Alignment Indicator Lights (RAIL)

MARKER BEACON - An electronic navigation facility which transmits a fan or boneshaped radiation pattern. When received by compatible airborne equipment they indicate to the pilot that he is passing over the facility. Two to three beacons are used to advise pilots of their position during an ILS approach.

MASTER PLAN - Long-range plan of airport development requirements.

MGW - Maximum Gross Weight

MILITARY OPERATION - An operation by military aircraft.

MINIMUM DESCENT ALTITUDE (MDA) - The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circling-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

MIRL - Medium Intensity Runway Lighting

MISSED APPROACH - A prescribed procedure to be followed by aircraft that cannot complete an attempted landing at an airport.

MITL - Medium Intensity Taxiway Lighting

MLS - Microwave Landing System

MM - Middle Marker (part of an ILS)

MOA - Military Operations Area

MODAL SPLIT - The distribution of trips among competing travel modes, such as walk, auto, bus, etc.

MODE - A particular form or method of travel such as walk, auto, carpool, bus, rapid transit, etc.

MOVEMENT - Synonymous with the term operation, i.e., a takeoff or a landing.

MSL - Mean Sea Level

N

NA - Not applicable

NAS - NATIONAL AIRSPACE SYSTEM - The common system or air navigation and air traffic encompassing communications facilities, air navigation facilities, airways, controlled airspace, special use airspace and flight procedures authorized by Federal Aviation Regulations for domestic and international aviation.

NAVAID - See Air Navigation Facility.

NB - Northbound

NDB - NON-DIRECTIONAL BEACON - An electronic ground station transmitting in all directions in the L/MF frequency spectrum; provides azimuth guidance to aircraft equipped with direction finder receivers. These facilities are often established with ILS outer markers to provide transition guidance to the ILS system.

NEPA - National Environmental Policy Act

NM - Nautical Mile

NOISE ABATEMENT - A procedure for the operation of aircraft at an airport which minimizes the impact of noise on the environs of the airport.

NOISE CONTOUR - A noise impact boundary line connecting points on a map where the level of sound is the same.

NOISE EXPOSURE MAP - A scaled, geographic depiction of an airport, its noise contours and surrounding area.

NOISE LEVEL REDUCTION (NLR) - The amount of noise level reduction achieved through incorporation of noise attenuation (between outdoor and indoor levels) in the design and construction of a structure.

NON-PRECISION APPROACH - A standard instrument approach procedure in which no electronic glide slope is provided.

NPI - Non-Precision Instrument Runway

NPIAS - National Plan of Integrated Airport Systems.

O

OAG - Official Airline Guide

OBSTRUCTION - Any structure, growth, or other object, including a mobile object, that exceeds a limiting height established by federal regulations or by a hazard zoning regulation.

OFZ – Obstacle free zone

OM - Outer Marker (part of an ILS)

OPERATING SPEED - The maximum average speed for a given set of roadway and traffic conditions.

OPERATION - An aircraft arrival at or departure from an airport.

ORIGINATION - A passenger boarding an aircraft at an airport who has started his trip from a local, off-airport point. Also applicable to freight shipments.

OUTER FIX - A point in the destination terminal area from which aircraft are cleared to the approach fix or final approach course.

P

PAPI - Precision Approach Path Indicator

PAR - Precision Approach Radar

PAX - Passenger

PEAK HOUR PERCENTAGE - The percentage of total daily trips or traffic occurring in the highest or "peak" hour. Frequently confused with Peak Hour Factor.

PEAK MONTH - The month of the year having the highest activity in terms of aircraft operations or passengers. Used to calculate the Average Day of the Peak Month measure needed to derive peak hour activity levels.

PERSON TRIP - A trip made by a person by any travel mode or combination of travel modes. A carpool of four persons entails one vehicle trip and four person trips.

PHASE - A part of the cycle allocated to any traffic movement or any combination of traffic movements.

PI - Precision Instrument Runway marking.

POSITIVE CONTROL - The separation of all air traffic within designated airspace by air traffic control.

PRECISION APPROACH - A standard instrument approach procedure in which an electronic glideslope/glidepath is provided; eg., ILS/MLS and PAR.

PRIMARY COMMERCIAL SERVICE AIRPORT - A commercial service airport which enplanes .01 percent or more of the total annual U.S. enplanements.

PRIMARY RUNWAY - The runway on which the majority of operations take place. On large, busy airports, there may be two or more parallel primary runways.

PRIMARY SURFACE - An area longitudinally centered on a runway with a width ranging from 250 to 1000 feet and extending 200 feet beyond the end of a paved runway.

PRODUCTION - A trip end associated with a dwelling unit or other trip "producer."

PROHIBITED AREA - Airspace of defined dimensions identified by an area on the surface of the earth within flight is prohibited.

PU - Publicly owned airport.

PVC - Poor visibility and ceiling.

PVT - Privately owned airport.

Q

QUEUE - A line of pedestrians or vehicles waiting to be served.

R

RADAR SEPARATION - Radar spacing of aircraft in accordance with established minima.

RAIL - Runway Alignment Indicator Lights

RCAG - Remote Center Air/Ground Communications

REIL - Runway End Identification Lights

RELIEVER AIRPORT - An airport which, when certain criteria are met, relieves the aeronautical demand on a high density air carrier airport.

RESTRICTED AREAS - Airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions.

RNAV - See Area Navigation.

ROFA – Runway object free area

ROTATING BEACON - A visual NAVAID displaying flashes of white and/or colored light used to indicate location of an airport.

RPZ – Runway protection zone

RSA – Runway safety area

RUNWAY PROTECTION ZONE –An area off the end of the runway end to enhance the protection of people and property on the ground.

RUNWAY SAFETY AREA - An area symmetrical about the runway centerline and extending beyond the ends of the runway which shall be free of obstacles as specified.

RVR - Runway Visual Range

RVV - Runway Visibility Value

R/W - Runway

S

SALS - Short Approach Light System

SANDAG – San Diego Association of Governments

SCREEN LINE - A line dividing a study area into two parts and used for a detailed comparison of measured and simulated traffic or travel during a model calibration process.

SDF - Simplified Directional Facility landing aid providing final approach course.

SEGMENTED CIRCLE - An airport aid identifying the traffic pattern direction.

SEPARATION MINIMA - The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

SMSA - Standard Metropolitan Statistical Area.

SOCIOECONOMIC - Data pertaining to the population and economic characteristics of a region.

SSALF - Simplified Short Approach Light System with Sequence Flashing lights.

SSALS - Simplified Short Approach Light System.

SSALR - Simplified Short Approach Light System with Runway Alignment Indicator Lights (RAIL)

STANDARD LAND USE CODING MANUAL (SLUCM) - A standard system for identifying and coding land use activities published by the U.S. Department of Housing and Urban Development and the Federal Highway Administration.

STRAIGHT-IN APPROACH - A descent in an approved procedure in which the final approach course alignment and descent gradient permits authorization of straight-in landing minimums.

STOL - Short Takeoff and Landing

STOVL - Short Takeoff Vertical Landing

SYSTEM PLAN - A representative of the aviation facilities required to meet the immediate and future air transportation needs and to achieve the overall goals.

T

TACAN - Tactical Air Navigation

TDZ - Touchdown Zone

TERMINAL AIRSPACE - The controlled airspace normally associated with aircraft departure and arrival patterns to/from airports within a terminal system and between adjacent terminal systems in which tower enroute air traffic control service is provided.

TERMINAL CONTROL AREA (TCA) - This consists of controlled airspace extending upward from the surface or higher to specified altitudes within which all aircraft are subject to positive air traffic control procedures.

TERPS - Terminal Instrument Procedures

T-HANGAR - A T-shaped aircraft hangar which provides shelter for a single airplane.

THRESHOLD - The beginning of that portion of the runway usable for landing.

TOUCH-AND-GO OPERATION - An operation in which the aircraft lands and begins takeoff roll without stopping.

TRAFFIC ANALYSIS OR ZONE - A subdivision of a study area used to aggregate dispersed data items, such as population, employment, etc., in preparation for estimating the trips attracted or produced by these data items and for loading such attractions and productions onto a simulation network.

TRAFFIC CONTROL DEVICE - Any sign, signal, marking or device placed or erected for the purpose of regulating, wording or guiding vehicular traffic and/or pedestrians.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at, taxiing on, and taking off from an airport. The usual components of a traffic pattern are upwind leg, crosswind leg, downwind leg and final approach.

TRANSIENT OPERATIONS - See Itinerant Operations.

TRANSITIONAL SURFACE - An element of the imaginary surfaces extending outward at right angles to the runway centerline and from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces.

TRANSITIONAL AIRSPACE - That portion of controlled airspace wherein aircraft change from one phase of flight or flight condition to another.

TRAVEL SHED - The total contributing area that generates trips which ultimately concentrate at a selected study point. Also called a travel sector.

TRIP - The one-way unit of travel between an origin and a destination.

TRIP ASSIGNMENT - That portion of the transportation planning process where distributed trips are allocated among the actual routes they can be expected to use.

TRIP DISTRIBUTION - That portion of the transportation planning process that estimates the spatial distribution of trips estimated during the trip generation phase.

TRIP END - The beginning or end of a trip.

TRIP GENERATION - That portion of the transportation planning process concerned with developing an estimate of the total number of trips attracted or produced by each traffic analysis zone in a study area.

TRIP PURPOSE - The primary reason for making a trip, i.e., work, shop.

TW & T/W - Taxiway

TWR - Control Tower

TVOR - Terminal Very High Frequency Omnirange Station

U

UHF - Ultra High Frequency

UNICOM - Radio communications station which provides pilots with pertinent airport information (winds, weather, etc.) at specific airports.

UTILITY RUNWAY - A runway intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight or less.

V

VASI - Visual Approach Slope Indicator providing visual glide path.

VASI-2 - Two Box Visual Approach Slope Indicator

VASI-4 - Four Box Visual Approach Slope Indicator

VECTOR - A heading issued to an aircraft to provide navigational guidance by radar.

VEHICLE MILES OF TRAVEL (VMT) - A measure of total travel within a study area, usually estimated as the total number of trips multiplied by the average length of a typical trip.

VFR - Visual Flight Rules that govern flight procedures in good weather.

VFR AIRCRAFT - An aircraft conducting flight in accordance with Visual Flight Rules.

VHF - Very High Frequency

VISUAL APPROACH RUNWAY - A runway intended for visual approaches only.

VOR - Very High Frequency Omnirange Station. A ground-based radio (electronic) navigation aid transmitting radials in all directions in the VHF frequency spectrum; provides azimuth guidance to pilots by reception of electronic signals.

VORTAC - Co-located VOR and TACAN.

V/STOL - Vertical/Short Takeoff and Landing

VTOL - Vertical Takeoff and Landing (includes, but is not limited to, helicopters).

W

WARNING AREA - Airspace which may contain hazards to non-participating aircraft in international airspace.

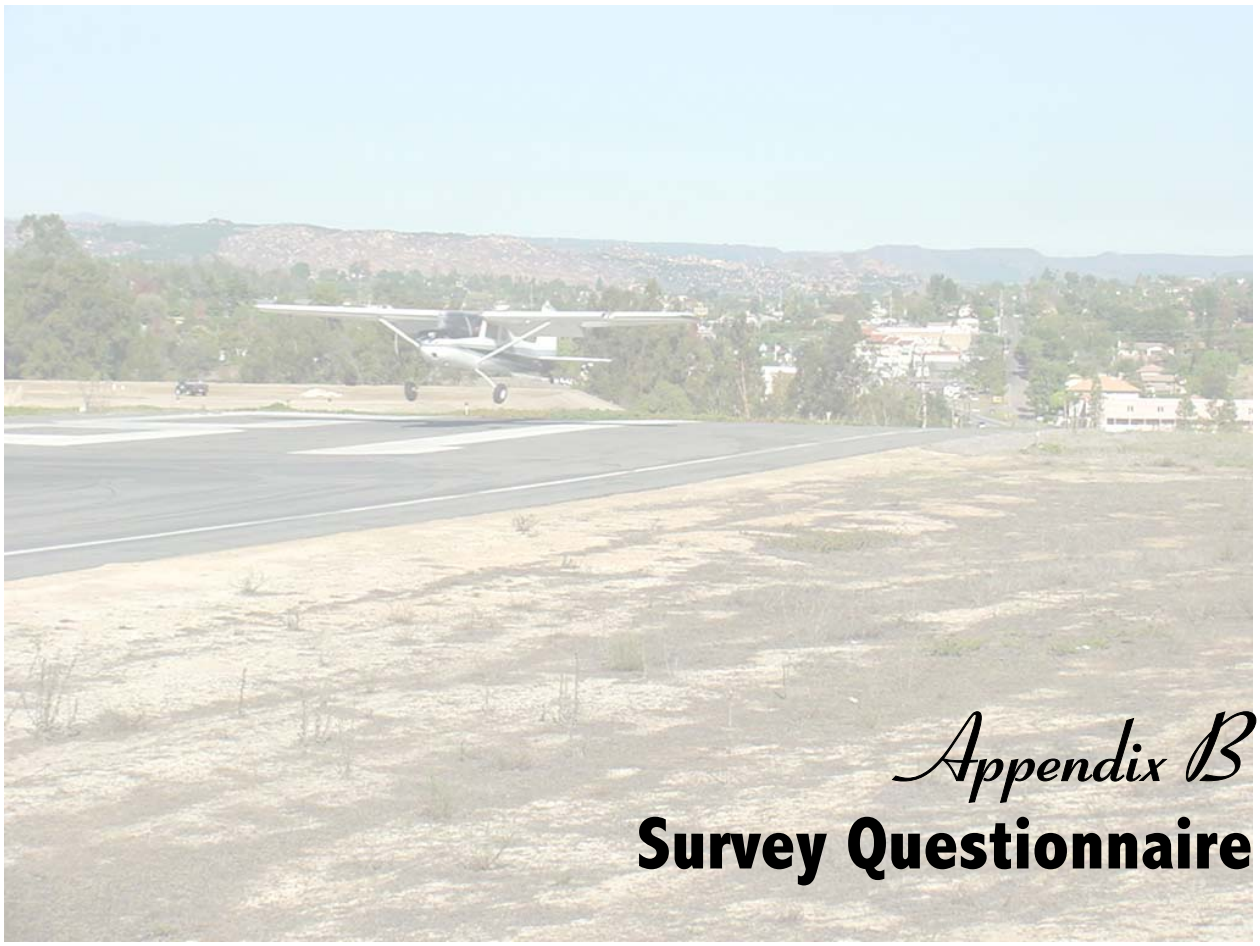
WB - Westbound

WIND CONE (WIND SOCK) - Conical wind directional indicator.

WIND TEE - A visual device used to advise pilots about wind direction at an airport.

Y

YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (Ldn) - The 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. the following day, averaged over a span of one year.



Appendix B
Survey Questionnaire

FALLBROOK COMMUNITY AIRPARK
BASED AIRCRAFT OWNERS SURVEY

The County of San Diego is developing an airport master plan for Fallbrook Community Airpark. An important plan objective is to incorporate improvements that are felt to be needed by existing and future airport users. To this end, we would very much appreciate your comments regarding future airport improvements. Please help us by taking a moment of your time to respond to the following questions.

OPTIONAL QUESTION

1. Please provide your name and phone number, if we may call you to discuss your responses.

Name
Day Phone

ALL RESPONDENTS PLEASE ANSWER THE FOLLOWING QUESTIONS

2. Where do you live?

State	County	City	Zip Code

3. Over the next five years I anticipate my flying activity to: {please check}

Increase	
Decrease	
Remain the Same	

4. If you now use Fallbrook Community Airpark, please check your type of use(s):

	Have aircraft based there.
	Own a fixed base operation or other business on airport.
	Member of flying club or rent/lease aircraft.
	Transient flights to and from the airport.
	Other:_____

5. If you now use Fallbrook Community Airpark, please list in importance to you the main improvements you would like to see made.

6. Indicate by priority the physical improvements you would like to see at Fallbrook Community Airpark.

	Highest Priority				**Lowest Priority**
Additional T-hangars					
Additional Tiedowns					
Additional Transient Parking					
Runway Extension					
Pavement Resurfacing					
Reconfiguration of Taxiways					
Wash Rack					
Expanded Security Program					
Improved Auto Access/Parking					
Navaids: _____					
Safety Areas					
Other: _____					
Other: _____					

7. Rate the adequacy of existing services and facilities as you have observed them that apply for Fallbrook Community Airpark. If a particular service or facility is not available or does not apply, please respond with "N/A" in the right hand margin for those services.

	Excellent			**Satisfactory**	**Poor**
Security					
FBO Services					
Flight Instruction					
Aircraft Maintenance					
Navigational Aids					
Transient Parking					
Tiedowns					
Auto Parking					
Hangar Facilities					
Fueling					
Rest rooms					
Flight Planning Area					
Pavement Condition					
Crosswind Coverage					
Other: _____					
Other: _____					

	Very Low			**Average**	**Very High**
Flight School Rates					
Maintenance Rates					
Fuel Costs					
Hangar Rental Rate					
Tiedown Rates					
Transient Parking Rates					

PLEASE ANSWER THE REMAINING QUESTIONS THAT APPLY TO YOU

8. If you have aircraft based at Fallbrook Community Airpark, please provide the following information for your airport activities:

Aircraft Type	Number of Aircraft	Annual Takeoffs *	Percent Touch and Go
Single-engine under 4 place			
Single-engine 4 place and over			
Multi-engine - piston			
Turboprop			
Turbojet			
Helicopter			
Other: _____			

* Include Touch and Go Operations

9. Please check the factors that most influenced you to locate or use your aircraft at Fallbrook Community Airpark.

	Proximity to home.
	Proximity to business.
	Favorable flying conditions.
	Availability of facilities.
	Availability of services.
	Cost of services.
	Other:_____

10. If you have aircraft based at Fallbrook Community Airpark, please indicate ***the number of*** your aircraft in tiedowns and hangars.

	Present Method of Storing Based Aircraft	Preference if Additional Hangars were Available
Number in Tiedowns		
Number in Hangars		

11. If you fly to/from Fallbrook Community Airpark, what percentage of your flights are for the following purposes?

	Business	**Personal**	**Training**	**Other**
Single-engine under 4 place				
Single-engine 4 place and over				
Multi-engine – piston				
Turboprop				
Turbojet				
Helicopter				

12. If you fly to/from Fallbrook Community Airpark, please estimate the amount of money spent annually in the area for the operation of your aircraft.

Hangar/Tiedown	$
Fuel	$
Maintenance	$
Insurance	$
Other: _____	$
Total	$

13. Please use this space for additional comments on other topics pertaining to the airport or master plan.

Kindly return your completed questionnaire in the pre-addressed, stamped envelope.

THANK YOU FOR YOUR TIME TO PROVIDE US THIS INFORMATION.

P&D Aviation
999 Town & Country Road
4th Floor
Orange, CA 92868

Appendix C

Economic Impact Analysis

Appendix C
Economic Impact Analysis

INTRODUCTION

This study incorporates the analysis of the impacts to the San Diego County economy from two distinct economic activities associated with Fallbrook Community Airpark: ongoing operations and capital improvements. The impact from ongoing operations at the Airpark, both non-airport related (agriculture and sports businesses) and airport related (FBO's and the Airpark operations) is not necessarily a "net" impact on the San Diego economy since the economic activity associated with the operations are servicing San Diego County consumers. Even the agricultural sector, which produces some exports, is primarily consumed locally (and of course, is not dependent on the Airpark for it's business). The capital improvement expenditures are one-time, non-reoccurring expenditures that are exogenous (outside the San Diego County economy).

In this study an input-output model of the San Diego County economy is used. Input/output analysis is a technique developed to analyze and quantify the economic interrelationships of the sectors that make up a region's economy. Furthermore, input-output models differentiate between external spending going to economic base industries (direct impacts) and then tracks the effects on local serving industries. These impacts on local serving industries are measured by their sales to the economic base industries (indirect impacts) and the sales of local industries that service household consumption (induced impacts). The term "input/output" refers to this interrelationship where the inputs of one industry (i.e., the purchases of materials and labor necessary to produce a good or service) must be purchased from the outputs of other industries (i.e., the sales of other industries and labor that are supplying the inputs).[1]

The interdependence of businesses, agriculture, households, and institutions within San Diego County is embodied in the requirements for production that each business, farm, household, or institution must have to survive and produce output. For example, businesses and farms require labor, electricity, water, transportation, finance, materials and supplies to produce goods and services. Households generally require food, water, gas, electricity, transportation, and shelter to produce labor. Institutions also require labor, basic utilities, transportation, finance, materials and supplies, to provide educational services, medical services, government, and public safety.

From the initial impact of spending there is additional indirect economic activity generated as the effects of the spending circulates through the regional economy. The interdependence of businesses within the region generates indirect economic impacts. By identifying and measuring the inputs (purchases) of each sector of the economy, and by identifying and measuring the outputs (sales) of each sector of the economy, it is possible to build a model that simulates the interdependence of businesses and households in the local economy.

[1] For a readable discussion see William H. Miernyk, The Elements of Input-Output Analysis, New York, Random House, 1965.

Further, with this regional input/output model it is possible to measure the total impact on the local economy of any business activity. These impacts are measured in terms of total regional sales, employment, and personal income (e.g., wage and salary income) generated directly and indirectly within the region. The input/output software used to develop San Diego County Regional Economic Impact Model was *IMPLAN Pro*, a microcomputer program that aids the user in developing and analyzing regional input-output models.

To assist in a full understanding of the results of this economic analysis, it is helpful to define some terminology that is specific to input/output analysis. Key to this terminology is the differentiation between "direct" impacts, "indirect" impacts, "induced" impacts, and economic "multiplier" effects.

INPUT/OUTPUT MODEL TERMINOLOGY

Direct Impacts refer to the initial sales resulting from the spending associated with the airpark. In this study we have represented the direct impacts based on employment for those businesses located at the airpark for ongoing operations and expenditures of the proposed capital improvement program.

Indirect Impacts result from the increased sales between businesses that are generated from the initial direct impact. For example, an FBO might spend a portion of the money it receives for office supplies, utilities, facilities maintenance, accounting and attorney services, and finance, etc.

Induced Impacts refer to the increased purchases by San Diego County households (generated by wages and salaries paid to residents). For example, the labor employed at the airpark make purchases in San Diego County. In addition, a part of all the indirect sales to businesses is spent for labor. As a result there is an increase in total employment and wages within the region. A large portion of these wages and salaries are spent for goods and services in the local area, creating an induced increase in sales.

Multiplier Effects refer to the total of all direct, indirect, and induced impacts as the initial airport related employment and spending ripples through the local economy. As a result, a $100 increase in spending at the airport may yield a total impact of $230 (direct, indirect, and induced) sales within San Diego County. The ratio of the total impact to the direct impact ($230 ÷ $100) yields an economic multiplier of 2.3.

For the purposes of this study, indirect and induced impacts are referred to as indirect impacts. This makes the report a little less cumbersome for the reader. The total economic impact is then the sum of the direct and indirect impacts. All economic impacts are measured in terms of total regional sales, employment, and income (wages, salaries, and proprietors' earnings).

IMPLAN INPUT/OUTPUT MODELING SOFTWARE

The *IMPLAN Pro* input/output modeling software uses data from the 528 industry U.S. input/output model and regional employment data by industry (economic sector) representing the various types of businesses that make up the local economy. The *IMPLAN Pro*[2] model software enables the user to regionalize the U.S. input/output model to any area of the United States down to the county level, which is the smallest level for which reliable industry specific employment data is available. For the purposes of this study, a regional economic model of San Diego County was constructed. To simplify the visitor economic impact analysis the original 528-industries were aggregated to a 26-sector model for the San Diego County economy. *IMPLAN Pro* software does this by aggregating sectors with similar characteristics and removing sectors that do not exist in the San

[2] *IMPLAN* Minnesota IMPLAN Group. St. Paul Minnesota, May 1998. *IMPLAN (Impact and Planning)*, 1993/U.S.D.A. Forest Service, 1992.

Diego County economy (e.g., coal mining). The following table presents a simplified version of the total San Diego County Economy as presented in the *IMPLAN model:*

	Values in Millions		
Industry	**Sales**	**Employment**	**Income**
Agriculture	$1,708	36,674	$1,011
Mining	$174	761	$107
Construction	$12,835	107,450	$5,042
Manufacturing	$25,161	140,796	$10,158
TCPU	$17,334	54,790	$9,404
Trade	$19,029	313,071	$11,383
FIRE	$28,968	132,225	$17,863
Services	$35,331	558,545	$21,385
Government	$21,547	312,913	$20,530
Other	$203	19,492	$203
Totals	$162,289	1,676,716	$97,086

Source: IMPLAN Pro

IMPACT OF FALLBROOK COMMUNITY AIRPARK OPERATIONS

Businesses at the Fallbrook Community Airpark were evaluated to determine employment information. Employment data was collected in-lieu of sales data, as most businesses are hesitant to give accurate sales information. Based on the information provided by the businesses at the airport, direct employment generated from operations at the airport is estimated to be:

Business	**Employees**
Nursery	352
Avacodos	10
Local Government	3
Airport	3
Tennis Club	4
Total	372

Source: CIC Research, Inc.

Therefore, the total (non-net) economic impact to the region (San Diego County) from ongoing airport operations at Fallbrook Community Airpark, including direct, indirect, and induced, is:

Total Jobs	543 employees
Total Sales ($Millions)	$34.6
Total Income ($Millions)	$10.4

Source: CIC Research, Inc.

IMPACT OF FALLBROOK COMMUNITY AIRPARK CAPITAL IMPROVEMENT PLAN

The spending associated with the capital improvement plan represents exogenous, one time expenditures that have a significant impact into the local economy. Unlike the impact from operations, which occur annually, the impacts associated with the capital improvement expenditures do not reoccur. However, they are "net" impacts as they are exogenous expenditures (i.e. spending from outside the San Diego County economy), even if funded by local government entities. The impacts are broken down by phase, not year, as the timing for the capital improvements are usually in a constant state of flux. The actual timing of the spending does not make a difference in the impact as we are using constant dollars, not actual dollars in displaying the magnitude. The total net economic impact to the region from ongoing the capital improvement plan at the Fallbrook Airpark, including direct, indirect, and induced, is shown in the following table.

	Master Plan Development Phase			
	Phase 1	**Phase 2**	**Phase 3**	**Total**
Output ($1,000)	$20,352	$4,745	$7,613	$32,709
Employment (jobs)	136	33	51	220
Income ($1,000)	$6,548	$1,454	$2,429	$10,431

Source: CIC Research, Inc.

Appendix D
Airfield Assessment

P&D Aviation
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Memorandum

To: Douglas Sachman

From: Peter Bonello

Date: June 6, 2003

Subject: Assessment of Airfield Geometrics

This memorandum report addresses the major deficiencies in airfield geometrics at Fallbrook Airpark as they relate to FAA standards and provides a qualitative analysis of the opportunities and constraints associated with correcting the deficiencies of significance.

METHODOLOGY

The airfield was inspected and selective field measurements taken in an effort to obtain a better understanding of the topography and grades of the airfield than is currently available from the Airport Layout Plan. Equipment used included a tripod mounted level, surveyor's staff/rod, a 100 ft measuring tape and a measuring wheel. An approximate stationing was established along the runway beginning at Station 10+00 at the north end, i.e. Runway 18. Cross sections were developed along the runway based on offsets from the easterly runway edge of pavement (EP).

ASSESSMENT OF DEFICIENCIES

The cross-sections generated from the field measurements are included at the end of this memorandum report and clearly demonstrate the excessive grades off the ends of the runway and on either side of the runway and parallel taxiway, runway surface irregularities, the slopes between apron areas and the excessive longitudinal grade of the main taxiway leading to the west hangar areas.

The issues identified for correction in order of priority with safety in mind are listed as follows:

Runway End Safety Area grades
Runway Longitudinal Grade
Runway Safety Area Transverse Grades
Runway to Taxiway Centerline Separation

Taxiway Width
Taxiway Safety Area Grades
West Taxiway Longitudinal Grade
Parallel Taxiway Longitudinal Grade

The constraints to consider in the development of solutions to address the above issues include:

Environmental Impacts
Construction Cost
Land Use Impacts

These impacts are not discussed in detail in this report but are factored into the basic recommendations made herein.

RUNWAY END SAFEY AREAS

Runway 18 end elevation is approximately 707.8 Ft above mean sea level (MSL). The grade slopes steeply down from this end of the runway to the airport service road at a rate of 23%. The south edge of the road is only 70 Ft away from the runway end. From the other side of the road the terrain slopes downwards at 36%. This road and related slopes are within the 240 ft long runway end safety area that should be provided beyond the end of an A-I runway. The recommended maximum grade within a runway end safety area is 5% and should not contain any abrupt changes in grade.

The simplest solution to correct this and provide a safety area off the end of the runway would be to relocate the threshold of Runway 18 by 240 Ft to the south. The cost would be minimal involving only pavement markings and modifications to runway threshold lights and runway edge lights.

Runway 36 end elevation is approximately 697 Ft above MSL. From this end about 180 ft of pavement, simulating a blast pad, extends downwards initially at a 4% slope and increasing in steepness to over 14%. The terrain then slopes from the end of this pavement to the south at approximately 5%.

It is recommended that the runway be extended by 240 Ft at this end to make up for the 240 Ft relocation of the threshold of Runway 18 and thus maintain the current runway length of 2,160 Ft. This extension is more appropriately referred to as a runway translation as it does not effectively alter the length of the runway for landing and take-off purposes. In addition, a runway safety area 240 Ft long should be provided off the end of the translated runway.

The construction cost associated with the runway translation and runway end safety area grading will include a significant amount of earthwork in the order of 72,000 CY. This amount assumes that the parallel taxiway is extended accordingly and at the appropriate runway to taxiway separation.

RUNWAY LONGITUDINAL GRADE

The elevations noted during the field inspections along the runway pavement centerline revealed a significant bump approximately 800 ft south of Runway 18 threshold. At this point a grade change of

over 2% is experienced over a 100 ft run. This change in longitudinal slope should be occurring over a length of 600 ft and by the use of a vertical curve.

This can be corrected relatively easily through the construction of a variable thickness pavement overlay that will raise the grade in this location and transition out smoothly through an appropriately designed vertical curve. Other cost implications include pavement remarking, re-grading of runway shoulders in this area and elevation adjustments to at least two runway edge light bases, (possibly four others) and possible safety area grading. The transverse grades of the runway safety area at this location are significantly deficient to begin with and their correction is discussed in the next section.

RUNWAY SAFETY AREA (RSA) TRANSVERSE GRADES

As demonstrated by the various cross sections taken along the runway, the transverse grades of the runway are excessive. These should not exceed 5%. The slopes within the RSA are as steep as 19% along the northern one third of the runway. In this area transverse grades slope steeply downwards to the parallel taxiway or upwards to the east where the service road or parking/viewing area is.

Reducing the RSA transverse grades to bring them in line with FAA standards will require moving the parallel taxiway further away and raising it. In order to meet the recommended runway/taxiway separation distance the taxiway should be relocated further away from the runway by 65 ft. (See next section). By doing this but maintaining the current taxiway grades the 19% transverse slope in the RSA is only improved to about 9%. After relocation, the taxiway would then still need to be raised by about 3 to 4 Ft at these locations to satisfy the 5% maximum rate of grade requirement. If the taxiway is not relocated it would need to be raised by over 6 Ft in certain areas.

The raising of the taxiway has a negative repercussion on the connecting taxiway to the hangar apron areas to the west. This Taxiway currently has a longitudinal slope downwards of 5%. The maximum recommended longitudinal slope for a taxiway is 2% for aircraft approach category A and B. Raising the taxiway will only make this steeper. It should be noted that relocating the taxiway further west in order to obtain the desired runway/taxiway separation will also aggravate this situation unless the taxiway is lowered.

An alternative to raising the taxiway is to lower the runway. Lowering the runway is a significant cost item but is less costly than raising hangars and associated aprons.

RUNWAY TO TAXIWAY CENTERLINE SEPARATION.

The runway centerline to taxiway centerline separation at Fallbrook is 85 feet. The standard is 150 feet.

The separation can be obtained by (1) moving the taxiway to the west, (2) moving the runway to the east or (3) a combination of both. Moving the taxiway to the west is likely to be the least costly of the three. However as mentioned in the previous section aggravates the steepness of the connecting taxiway to the hangar apron areas. Moving the runway to the east is more costly and will involve some significant excavation for the northern one third of the runway and would not leave enough room for a perimeter road east of the runway by the protected open space. It should be noted that the excavation

generated for the northern one third of the runway could be used in translating the runway to the south and grading of the runway end safety area. In order to avoid encroaching too close to the perimeter road and transient parking areas to the east, moving both runway and taxiway away from each other has merit, however, this is likely to be more costly and a refinement of this concept which involves rotating the runway to a small degree is discussed later in this report. Moving both in order to provide the room for the perimeter road is the most costly option and is only recommended if it is desired to solve all of the geometric deficiencies.

Also worth considering is the abandonment of the southerly two-thirds of the parallel taxiway and constructing a new taxiway extending from Runway 36 threshold in a north westerly direction towards the new hangar areas and continuing northerly to tie into the taxiway currently serving them. The lay of the land is such that slopes meeting FAA criteria should be easily obtained without significant earthwork.

This taxiway will be approximately 2,000 ft long and will traverse through airport land that is currently leased for non-aviation use (agricultural/horticultural use).

TAXIWAY WIDTH

Taxiway A is 20 feet wide whereas the standard taxiway width for ADG A-I is 25 feet. Any widening of the taxiway in order to correct this without attempting to address the other airfield deficiencies should be done at the far side from the runway in an effort to avoid aggravating the runway safety area transverse grades and improve on the runway/taxiway separation. Any new taxiways should comply with the 25 ft width requirement.

TAXIWAY SAFETY AREA (TSA)

The TSA width is 49 Ft (centered along the taxiway centerline) for ADG A-1. The transverse grades within this safety area should slope downwards away from the edge of taxiway pavement and with slopes that do not exceed 5%. In many locations the grades slope upwards on the runway side of the parallel taxiway. This cannot be corrected without aggravating the RSA transverse slopes unless the separation between the runway and taxiway is increased.

WEST TAXIWAY LONGITUDINAL GRADES

The longitudinal slope of the taxiway extending from the parallel taxiway to the hangar apron areas slopes at 5%. This should not exceed 2%. In order to correct this without changing the elevations of either the taxiway or the hangars is to change the alignment of this taxiway and develop a circuitous route north of its current location. This route should be designed to navigate around, and provide access to, additional hangar apron areas in this site.

This taxiway also poses a problem to users that may meet half way. The steep longitudinal grades, as well as lack of opportunities to turn off, is an unsafe situation. This problem is likely to get worse as more hangars are being built. Construction of new hangars were observed during our field visit as well

as construction of additional pads for even more aircraft. Turn-off opportunities should be explored as well as alternate taxi routes from these areas to the runway.

The new parallel taxiway described in the section addressing the separation between the runway and taxiway that extends from Runway 36 end will help with this problem of oncoming traffic if a one-way taxi system where implemented. The new taxiway could be used for hangar bound traffic while this west taxiway, or a variation thereof, would be used for runway bound traffic.

PARALLEL TAXIWAY LONGITUDINAL GRADES

Just north of the mid-field connector to the runway, the parallel taxiway drops 6 ft over a distance of 170 ft. This translates to an average 3.5% slope with slopes in excess of 4% at certain points. This exceeds the 2% recommended maximum. This change in elevation should be mitigated over a longer stretch of taxiway which in turn will require either raising a portion of the taxiway to the north, lowering a portion of the taxiway to the south or a combination of both. Raising any portion of the taxiway to the north is more desirable from a standpoint of runway safety areas.

CONCLUDING REMARKS

The airfield should strive to improve upon the existing deficiencies if not correct them entirely. At the same time the magnitude of the costs involved should be weighed in determining the practicality of the solution.

Some of the issues directly impact or effect each other such as the runway/taxiway separation, taxiway longitudinal grades and runway/taxiway safety areas, and finding a solution of one of these should not be done without considering the impact on the others.

It is fair to say that the runway surface and runway end safety areas can be addressed without directly aggravating the other deficiencies. However, deciding to proceed with fixing these two, arguably highest priority, items in the current runway location/orientation, might result in a more difficult and costly solution for some of the other items if it is decided to address them later. Arguably this is a very reasonable approach to take when considering the funding is not likely to be there to construct the needed improvements all at once.

If it is determined that lowering the runway is a viable option worthy of further consideration because of the inherent advantages in reducing the cost of the runway translation, runway end safety areas, and the runway safety area transverse grades, then modifying the location to a degree may also be worth considering.

By rotating the runway clockwise about a point on the centerline directly opposite the segmented circle, the following opportunities present themselves.

1. The Runway 18 end is distanced from the west hangar apron area and thus provides more opportunity for the west taxiway to be realigned in an effort to address the steepness of this taxiway and also provide more room for hangar/apron development or other aviation use.

2. The central portion of the runway, south of the segmented circle, moves westerly away from the perimeter road that runs right along the protected open space area. This would then permit the entire runway after rotation to be shifted easterly to provide more opportunity for less steep grades on the west side.
3. The Runway 36 end moves further west and therefore would require a shorter taxiway be constructed from this end to the hangar apron areas.
4. A larger area for transient parking or other similar aviation use will be made available

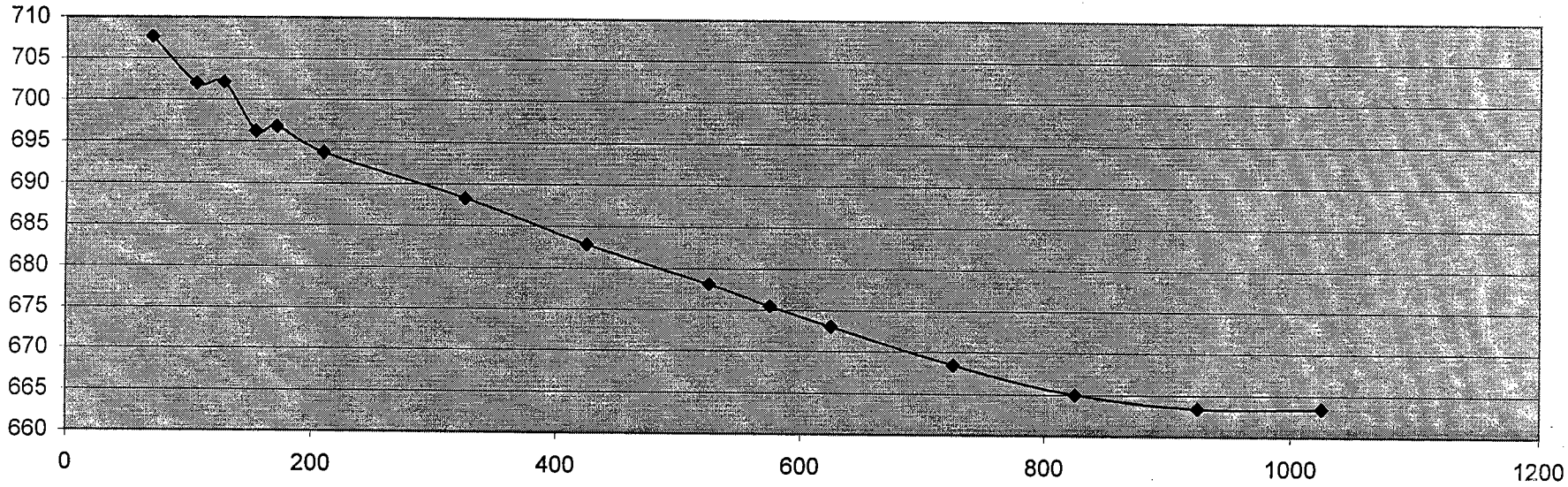
The rotation of the runway as described above will impact a portion of an avocado grove north that exists on airport property north east of the runway. It will also require excavating the terrain east of the northerly portion of the runway between the runway and the perimeter road up to and including the parking area. This is likely to serve as a good source for earth that will be needed for the runway translation and related RSA improvements.

The rotation will direct departing traffic closer to Camp Pendleton's boundaries and this would require assessment in terms of airspace. Other noise impacts would need to be evaluated and addressed, but the initial thinking is that arriving traffic would be further away from the new residential development going on just north west of the Runway 18 end and may have similar benefits to the south for departing traffic.

Lowering or rotating or relocating the runway will render the airport closed for a period of time during construction.

It is recommended that a concept plan be developed that involves the rotated and translated runway as well as the new taxiway system discussed. Understanding that this is not a part of the scope of work of the master plan an amendment to P&D's contract would enable the preparation of such a plan which may include an alternate ALP as well as a rough grading plan in order to better identify the feasibility, construction cost and land use impacts of this concept.

Attachments: Airfield Cross Sections,
Profiles and Survey Data

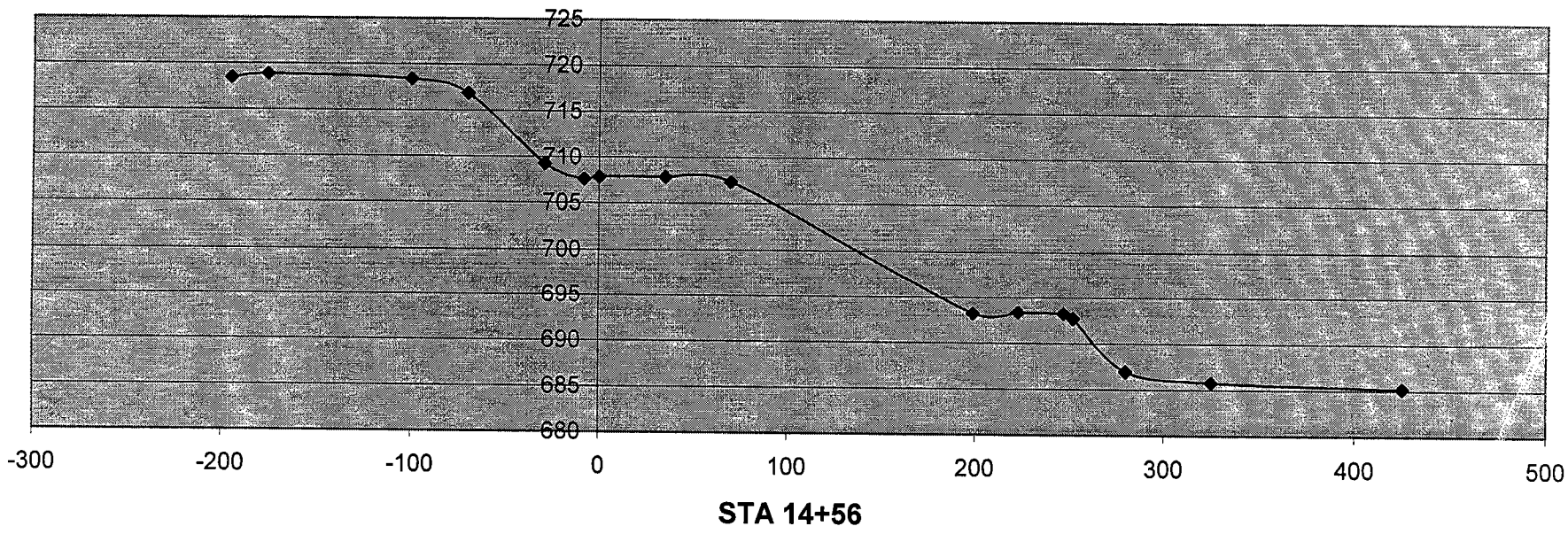


STA 14+05
PROFILE OF TAXIWAY TO LOWER HANGARS

Section looking south.
"0" is E'ly RW EP

Average longitudinal grade of Taxiway to Lower Hangar Area is **5%**

FALLBROOK AIRPARK MASTER PLAN
AIRFIELD GEOMETRIC ANALYSIS



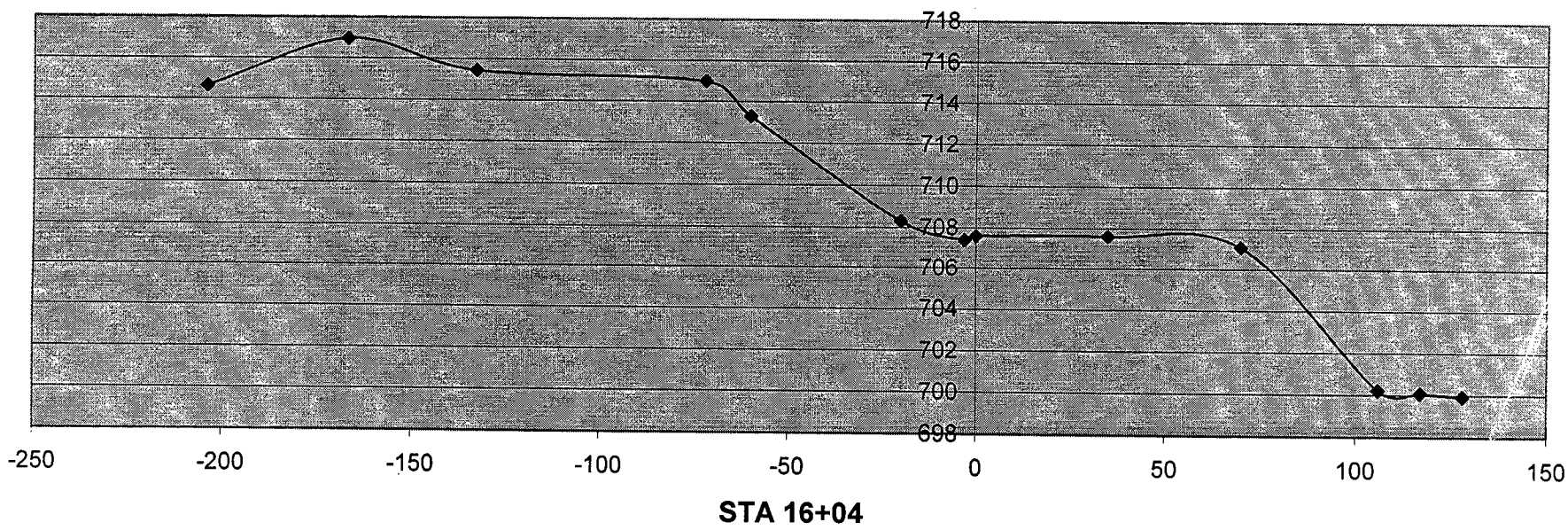
Section looking south.
"0" is E'ly RW EP

Slope between Runway and Parallel Taxiway is **11%**

Slope between Runway and Parking Area is **19%**

Max Trans. Slope within RSA (120 ft wide) is **8%**

FALLBROOK AIRPARK MASTER PLAN
AIRFIELD GEOMETRIC ANALYSIS

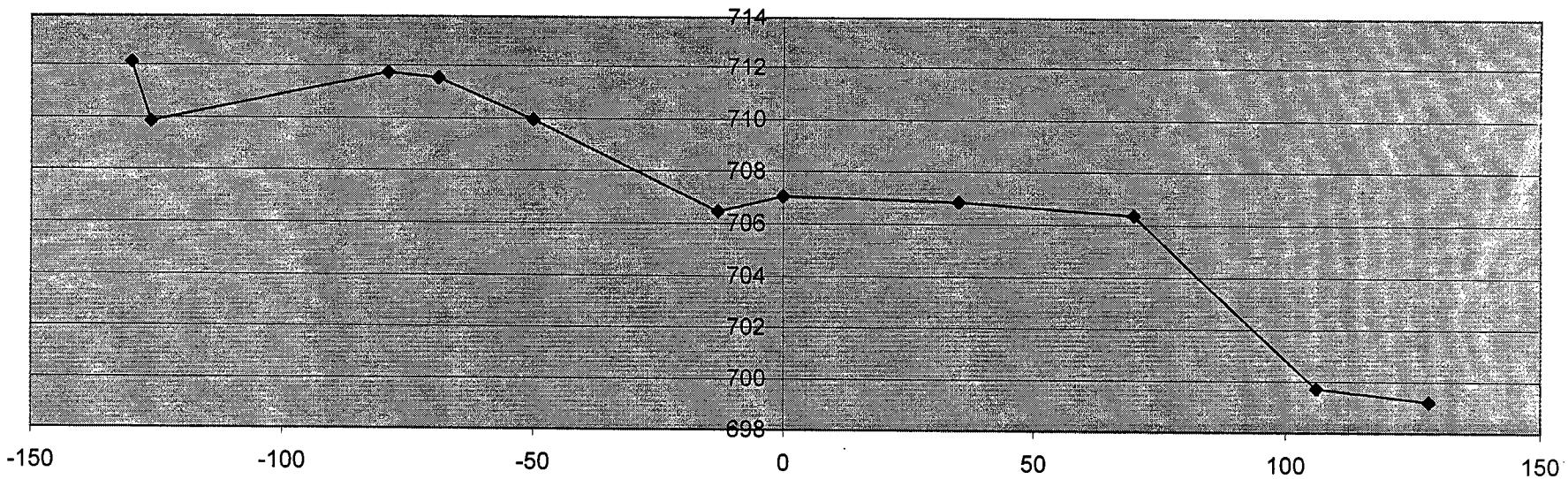


Section looking south.
"0" is E'ly RW EP

Slope between Runway and Parallel Taxiway is **19%**

Slope between Runway and Parking Area is **13%**

Max Trans. Slope within RSA (120 ft wide) is **12%**

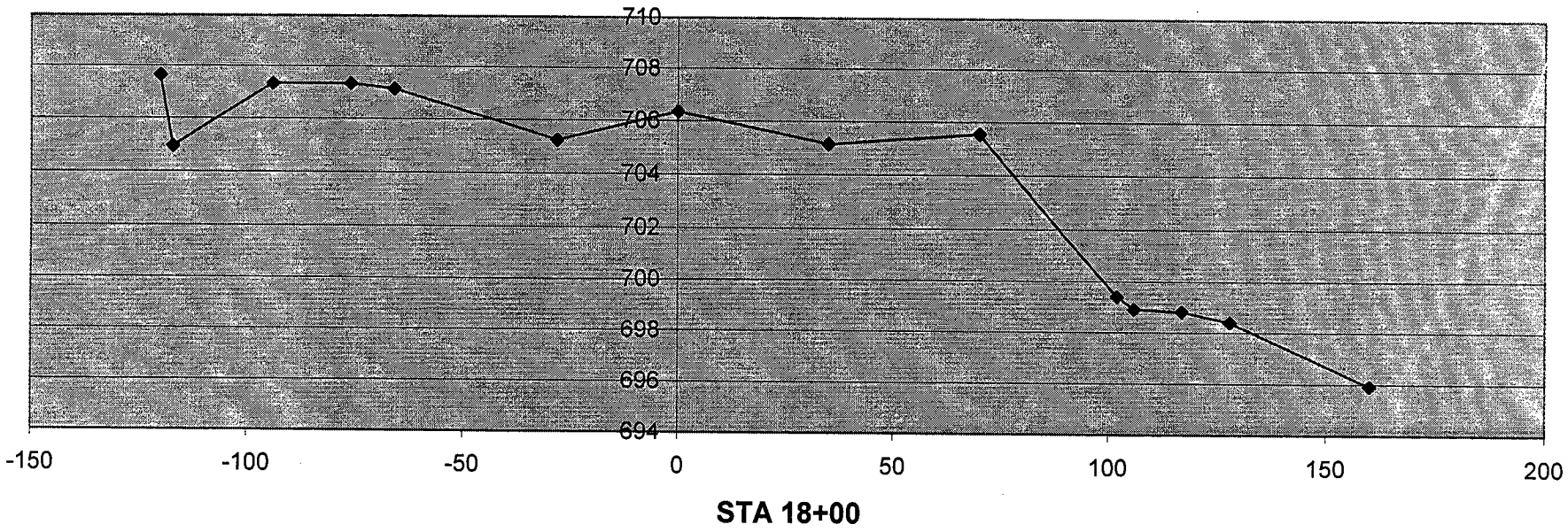


Section looking south.
"0" is E'ly RW EP

Slope between Runway and Parallel Taxiway is **18%**

Slope between Runway and Parking Area is **9%**

Max Trans. Slope within RSA (120 ft wide) is **18%**

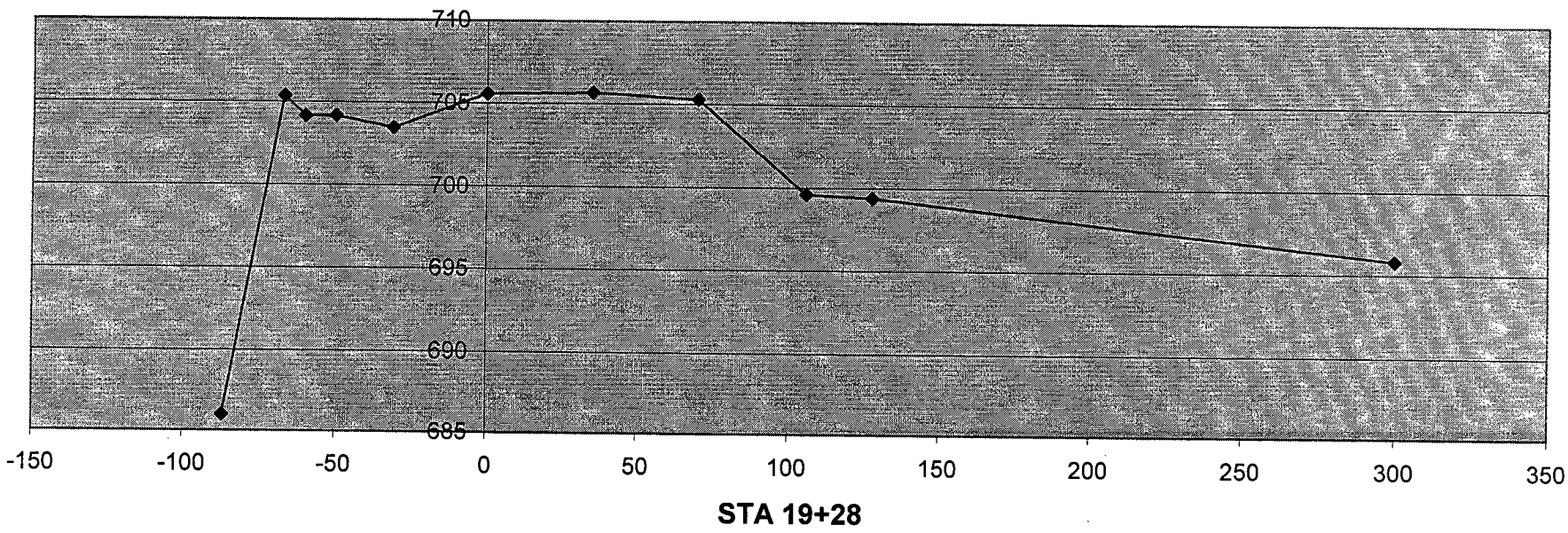


Section looking south.
"0" is E'ly RW EP

Slope between Runway and Parallel Taxiway is **19%**

Max Trans. Slope within RSA (120 ft wide) is **19%**

FALLBROOK AIRPARK MASTER PLAN
AIRFIELD GEOMETRIC ANALYSIS



STA 19+28

Section looking south.
"0" is E'ly RW EP

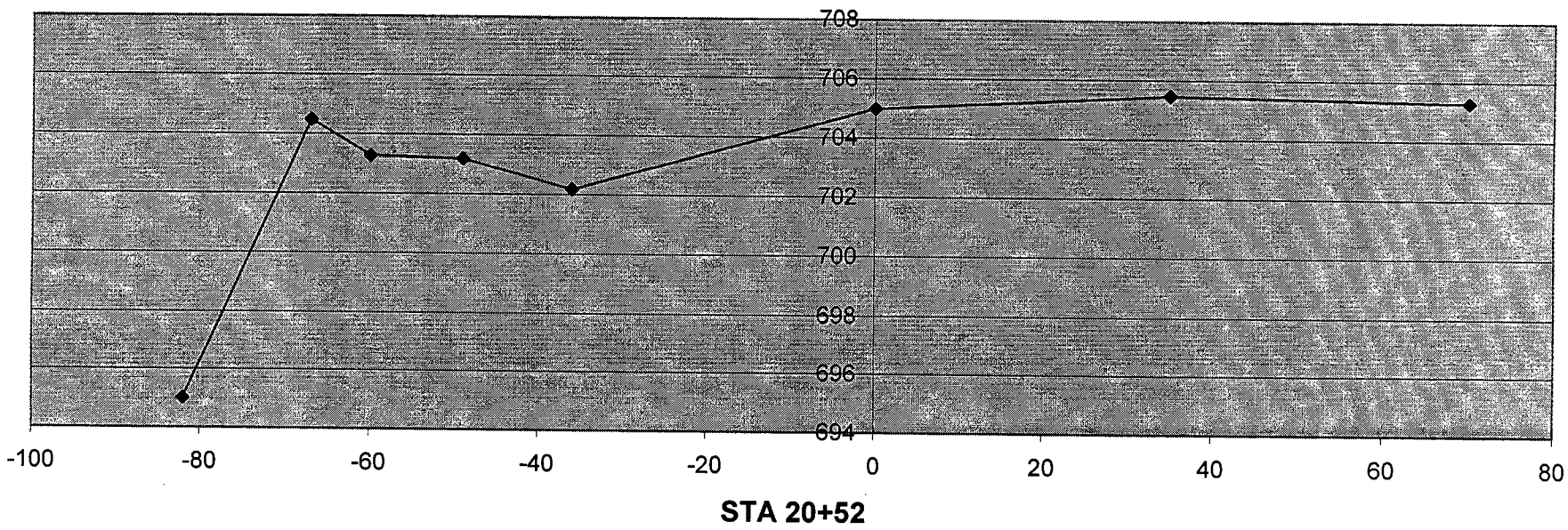
Slope between Runway and Parallel Taxiway is **16%**

Max Trans. Slope within RSA (120 ft wide) is **16%**

Slope down to Flowline is **7%**

Slope down to the east is **1:1**

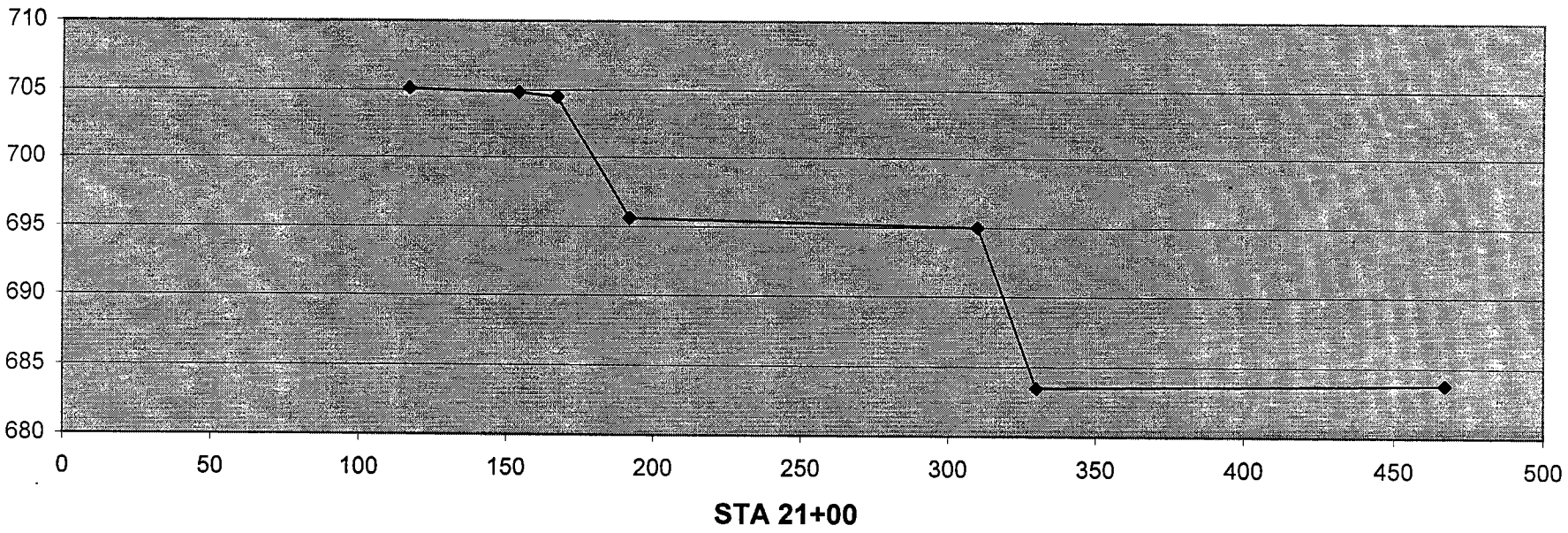
FALLBROOK AIRPARK MASTER PLAN
AIRFIELD GEOMETRIC ANALYSIS



Section looking south.
"0" is E'ly RW EP

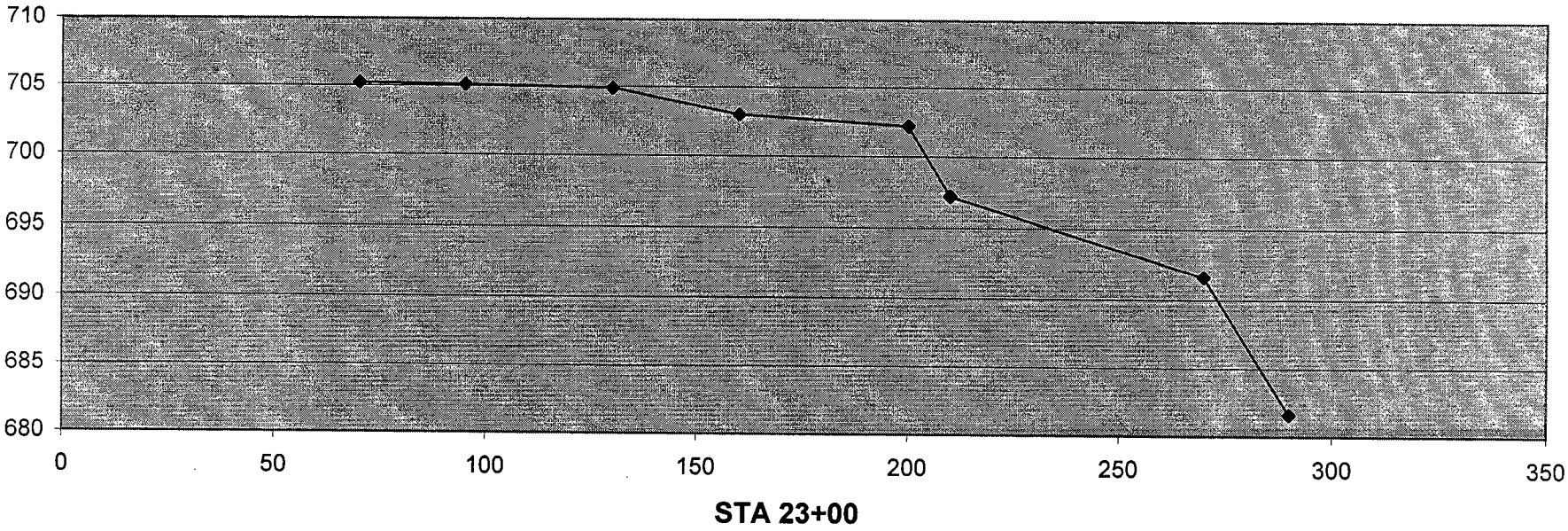
Slope down to Flowline is **8%**

Slope down to the east is **1.5:1**



Section looking south.
"0" is E'ly RW EP

FALLBROOK AIRPARK MASTER PLAN
AIRFIELD GEOMETRIC ANALYSIS

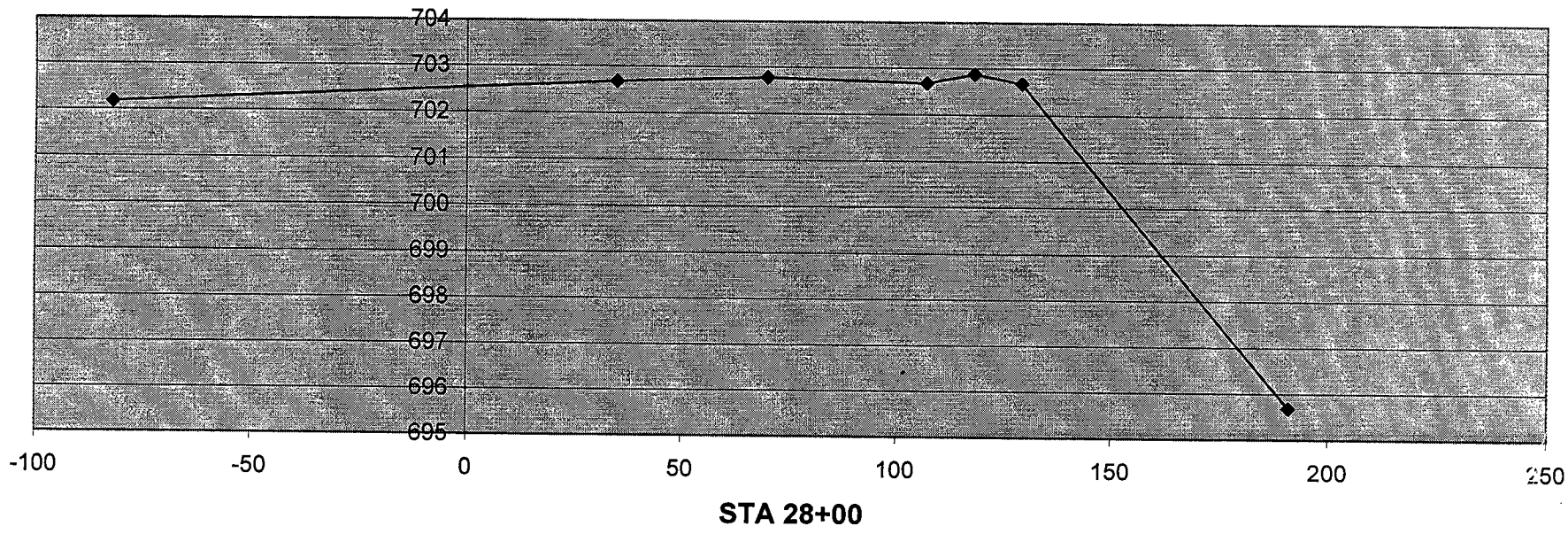


Section looking south.
"0" is E'ly RW EP

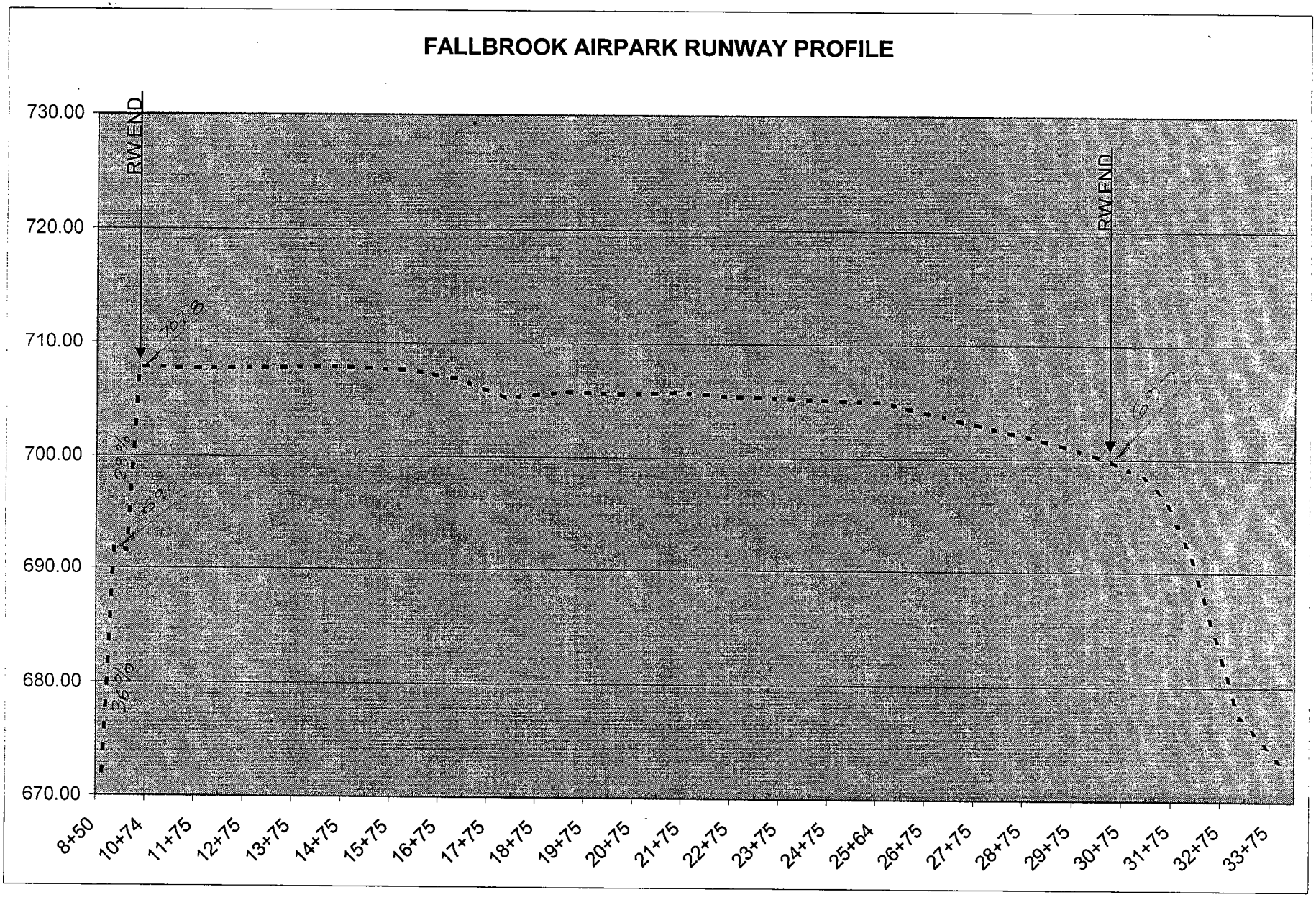
Slope down to Taxiway is **6%**

Max slope down to the west is **2:1**

FALLBROOK AIRPARK MASTER PLAN
AIRFIELD GEOMETRIC ANALYSIS



Section looking south.
"0" is E'ly RW EP



P&D AVIATION
MAY 2003

FALLBROOK AIRPARK MASTER PLAN

RUNWAY LONGITUDINAL GRADES

Station	Elevations	Rate of Grade	Grade Breaks
8+50	**672.05**		
9+06	**692.05**		
9+30	**691.55**	-2.08%	
10+00	**707.80**		
10+74	**707.85**	0.07%	
11+00	707.80		
11+25	707.74		
11+48	**707.69**	-0.22%	0.28%
11+75	707.70		
12+00	707.72		
12+25	707.73		
12+50	707.75		
12+75	707.76		
13+00	707.78		
13+34	**707.79**	0.05%	0.27%
13+50	707.81		
13+75	707.83		
14+00	707.85		
14+25	707.87		
14+56	**707.89**	0.08%	0.03%
14+75	707.84		
15+00	707.79		
15+25	707.74		
15+50	707.69		
15+75	707.64		
16+00	**707.59**	-0.21%	0.29%
16+25	707.40		
16+50	707.22		
16+75	707.03		
17+00	**706.84**	-0.75%	0.54%
17+25	706.42		
17+50	705.99		
17+75	705.57		
18+00	**705.14**	-1.70%	0.95%
18+25	705.25		
18+50	705.36		
18+75	705.46		
19+00	705.57		
19+28	**705.68**	0.42%	
19+50	705.64		
19+75	705.60		
20+00	705.56		
20+25	705.52		
20+52	**705.48**	-0.16%	0.58%
20+75	705.53		
21+00	705.58		
21+25	705.63		
21+50	**705.68**	0.20%	0.37%

DEVIATION FROM STANDARD
Minor
Significant
Very Significant

P&D AVIATION
MAY 2003

RUNWAY LONGITUDINAL GRADES

Station	Elevations	Rate of Grade	Grade Breaks
21+75	705.61		
22+00	705.53		
22+25	705.46		
22+50	**705.38**	-0.30%	0.50%
22+75	705.34		
23+00	705.30		
23+25	705.26		
23+50	705.23		
23+75	705.19		
24+00	705.15		
24+25	705.11		
24+50	705.07		
24+75	705.03		
25+00	705.00		
25+25	704.96		
25+50	704.92		
25+64	**704.88**	-0.16%	0.14%
26+00	704.64		
26+25	704.39		
26+50	704.15		
26+75	703.90		
27+00	703.66		
27+25	703.41		
27+50	703.17		
27+75	702.92		
28+00	**702.68**	-0.93%	0.77%
28+25	702.43		
28+50	702.18		
28+75	701.93		
29+00	**701.68**	-1.00%	0.07%
29+25	701.38		
29+50	701.08		
29+75	700.78		
30+00	**700.48**	-1.20%	0.20%
30+25	700.03		
30+50	699.58		
30+75	699.13		
31+00	**698.68**	-1.80%	0.60%
31+25	697.58		
31+50	**696.48**	-4.40%	
31+75	694.13		
32+00	**691.78**		
32+25	688.18		
32+50	**684.58**		
32+75	680.98		
33+00	**677.38**		0.00%
33+25	676.13		
33+50	**674.88**	-5.00%	
33+75	673.63		
34+00	**672.38**	-5.00%	0.00%

FALLBROOK AIRPARK MASTER PLAN
EXISTING TOPOGRAPHY CROSS SECTION DATA

STATION	OFFSET ELEVATION													
28+00	-82	35	70	107	118	129	191							
	702.18	702.68	702.78	702.68	702.88	702.68	695.68							
27+00		109	120	131	178	203								
		703.68	703.68	703.58	702.98	697.78								
26+00		70	109	131	157	167								
		703.98	704.08	703.98	703.18	701.28								
25+64		-82	0	35	70									
	702.88	703.28	704.58	704.88	704.58									
25+00		70	109	120	131									
		705.08	704.28	704.68	704.48	699.38								
24+00		70	109	120	131									
		705.28	704.88	704.88	704.33									
23+00		70	95	130	160	200	210	270	290					
		705.21	705.11	704.91	703.01	702.21	697.21	691.61	681.61					
21+00		117	154	167	192	310	330	467						
		705.11	704.81	704.51	695.61	695.01	683.51	683.81						
20+52	-82	-67	-60	-49	-36	0	35	70						
	695	704.48	703.28	703.18	702.18	704.98	705.48	705.28						
19+28	-87	-67	-60	-50	-31	0	35	70	106	128	300			
	686	705.38	704.18	704.18	703.48	705.58	705.68	705.31	699.61	699.41	695.81			
18+00	-120	-117	-94	-76	-66	-28	0	35	70	102	106	117	128	160
	707.64	704.94	707.34	707.34	707.14	705.24	706.34	705.14	705.54	699.41	698.91	698.81	698.41	695.91
16+96	-130	-126	-79	-69	-50	-13	0	35	70	106	128			
	712.14	709.84	711.74	711.54	709.94	706.44	707.04	706.84	706.34	699.71	699.21			
16+04	-204	-167	-133	-72	-60	-20	-3	0	35	70	106	117	128	

FALLBROOK AIRPARK MASTER PLAN
EXISTING TOPOGRAPHY CROSS SECTION DATA

	714.64	716.94	715.44	714.99	713.29	708.29	707.39	707.59	707.59	707.09	700.21	700.07	699.91			
14+56	-195	-176	-100	-70	-29	-8	0	35	70	199	223	247	252	280	325	425
	718.49	718.89	718.39	716.89	709.29	707.59	707.89	707.89	707.39	693.16	693.26	693.16	692.66	686.96	685.76	685.16
14+05		70	106	128	154	171	209	325	425	525	575	625	725	825	925	1025
		707.62	702.02	702.12	696.26	696.86	693.76	688.36	682.86	678.16	675.52	673.06	668.45	665.05	663.45	663.45
13+34	-172	-150	-100	-69	-38	-24	-9	0	35							
	717.89	718.19	717.89	716.69	710.29	708.39	707.69	707.89	707.79							
12+16	-131	-110	-72	-50	-36	-25	0									
	715.19	714.69	715.39	710.79	708.69	707.69	707.79									
11+48	-127	-106	-94	-85	-63	-37	-21	0	35							
	710.35	710.15	710.45	711.89	711.39	708.29	707.69	707.89	707.69							
11+07		-104	-91	-72	-57	-49	-31	0								
	708.35	707.85	707.75	709.25	708.95	708.35	707.65	707.85								
10+00		-88	-73	-10	0											
	699.45	697.45	697.35	707.15	708											

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
B.M. A			3.05	710.85		707.80	
9+06	35 R	1		710.85	18.80	692.05	
9+06	0	2		710.85	18.30	692.55	
9+30	35 R	3		710.85	19.30	691.55	
9+30	0	4		710.85	19.00	691.85	
9+64	56 L	5		710.85	16.40	694.45	
9+64	59 L	6		710.85	16.50	694.35	
9+75		7		710.85	15.10	695.75	E.P.
9+80	66 L	8		710.85	15.00	695.85	
10+00	0	9		710.85	2.85	708.00	
10+00	10 L	10		710.85	3.70	707.15	
10+00	73 L	11		710.85	13.50	697.35	
10+00	88 L	12		710.85	13.40	697.45	E.P.
10+00		13		710.85	11.40	699.45	E.P.
10+11	24 L	14		710.85	2.90	707.95	
10+23	31 L	15		710.85	2.80	708.05	
10+23	46 L	16		710.85	6.30	704.55	
10+23	80 L	17		710.85	11.80	699.05	
10+26	31 L	18		710.85	2.50	708.35	
10+74	61 R	19		710.85	3.40	707.45	E.P.
10+74	35 R	20		710.85	3.00	707.85	C.L.
10+74	0	21		710.85	3.70	707.15	E.P.
10+74	41 L	22		710.85	3.10	707.75	
10+74	64 L	23		710.85	4.30	706.55	RIP RAP
10+74	101 L	24		710.85	6.50	704.35	E.P.
10+74		25		710.85	5.50	705.35	E.P.
11+07	0	26		710.85	3.00	707.85	E.P.
11+07	31 L	27		710.85	3.20	707.65	
11+07	49 L	28		710.85	2.50	708.35	
11+07	57 L	29		710.85	1.90	708.95	
11+07	72 L	30		710.85	1.60	709.25	
11+07	91 L	31		710.85	3.10	707.75	
11+07	104 L	32		710.85	3.00	707.85	E.P.
11+07		33		710.85	2.50	708.35	E.P.

Where:

+S = Backsight
= Sight w/ Rod on B.M.
H.I. = B.M. ELEV. + S
-S = Foresight
= Sight w/ Rod on Pt.
Pt. ELEV. = H.I. - S

TP = Turning Pt. (Rod position when Level is moved)

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
11+48	127 L	34		710.85	0.50	710.35	E.P.
11+48	106 L	35		710.85	0.70	710.15	E.P.
11+48	94 L	36		710.85	0.40	710.45	
TP B				710.85		707.80	
B.M. B			13.19	720.99			
11+48	85 L	37		720.99	9.10	711.89	
11+48	63 L	38		720.99	9.60	711.39	Ridge
11+48	37 L	39		720.99	12.70	708.29	Ridge
11+48	21 L	40		720.99	13.30	707.69	F.L.
11+48	0	41		720.99	13.10	707.89	E.P.
11+48	35 R	42		720.99	13.30	707.69	C.L.
12+16	0	43		720.99	13.20	707.79	E.P.
12+16	25 L	44		720.99	13.30	707.69	
12+16	36 L	45		720.99	12.30	708.69	
12+16	50 L	46		720.99	10.20	710.79	
12+16	72 L	47		720.99	5.60	715.39	TOP
12+16	110 L	48		720.99	6.30	714.69	E.P.
12+16	131 L	49		720.99	5.80	715.19	E.P.
12+60	103 L	50		720.99	4.50	716.49	E.P.
13+04		51		720.99	3.20	717.79	
13+34	35 R	52		720.99	13.20	707.79	C.L.
13+34	0	53		720.99	13.10	707.89	E.P.
13+34	9 L	54		720.99	13.30	707.69	
13+34	24 L	55		720.99	12.60	708.39	
13+34	38 L	56		720.99	10.70	710.29	
13+34	69 L	57		720.99	4.30	716.69	
13+34	100 L	58		720.99	3.10	717.89	E.P.
13+34	150 L	59		720.99	2.80	718.19	E.P.
13+34	172 L	60		720.99	3.10	717.89	FENCE
14+56	70 R	61		720.99	13.60	707.39	
14+56	35 R	62		720.99	13.10	707.89	C.L.
14+56	0	63		720.99	13.10	707.89	E.P.
14+56	8 L	64		720.99	13.40	707.59	
14+56	29 L	65		720.99	11.70	709.29	

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
14+56	70 L	66		720.99	4.10	716.89	
14+56	100 L	67		720.99	2.60	718.39	E.P.
14+56	176 L	68		720.99	2.10	718.89	E.P.
14+56	195 L	69		720.99	2.50	718.49	FENCE
		70		720.99	4.90	716.09	
16+04	70 R	71		720.99	13.90	707.09	E.P.
16+04	35 R	72		720.99	13.40	707.59	C.L.
16+04	0	73		720.99	13.40	707.59	E.P.
16+04	3 L	74		720.99	13.60	707.39	
16+04	20 L	75		720.99	12.70	708.29	
16+04	60 L	76		720.99	7.70	713.29	
16+04	72 L	77		720.99	6.00	714.99	E.P.
TP C				720.99	6.00	714.99	
B.M. C			5.95	720.94			
16+04	133 L	78		720.94	5.50	715.44	E.P.
16+04	167 L	79		720.94	4.00	716.94	H.P.
16+04	204 L	80		720.94	6.30	714.64	E.P.
16+25	126 L	81		720.94	7.10	713.84	E.P.
16+37	72 L	82		720.94	6.90	714.04	E.P.
16+37	83 L	83		720.94	6.60	714.34	E.P.
16+37	112 L	84		720.94	3.90	717.04	E.P.
16+62	107 L	85		720.94	9.30	711.64	F.L.
16+62	126 L	86		720.94	3.40	717.54	TOP
16+62	161 L	87		720.94	1.50	719.44	
16+62		88		720.94	4.00	716.94	FENCE
16+62		89		720.94	6.70	714.24	TOW
16+90	132 L	90		720.94	4.60	716.34	
16+90	109 L	91		720.94	8.80	712.14	TOP
16+90	104 L	92		720.94	11.10	709.84	F.L.
16+96	70 R	93		720.94	14.60	706.34	E.P.
16+96	35 R	94		720.94	14.10	706.84	C.L.
16+96	0	95		720.94	13.90	707.04	E.P.
16+96	13 L	96		720.94	14.50	706.44	F.L.
16+96	50 L	97		720.94	11.00	709.94	G.B.

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
16+96	69 L	98		720.94	9.40	711.54	E.P.
16+96	79 L	99		720.94	9.20	711.74	E.P.
16+96	126 L	100		720.94	11.10	709.84	F.L.
16+96	130 L	101		720.94	8.80	712.14	TOP
17+32	68 L	102		720.94	11.00	709.94	E.P.
17+32	78 L	103		720.94	10.40	710.54	E.P.
17+32	105 L	104		720.94	12.20	708.74	F.L.
17+32	112 L	105		720.94	9.80	711.14	TOP
17+32	166 L	106		720.94	6.30	714.64	H.P.
17+32	216 L	107		720.94	5.10	715.84	
18+00	70 R	108		720.94	15.40	705.54	E.P.
18+00	35 R	109		720.94	15.80	705.14	C.L.
18+00	0	110		720.94	14.60	706.34	E.P.
18+00	28 L	111		720.94	15.70	705.24	F.L.
18+00	66 L	112		720.94	13.80	707.14	E.P.
18+00	76 L	113		720.94	13.60	707.34	E.P.
18+00	94 L	114		720.94	13.60	707.34	
18+00	117 L	115		720.94	16.00	704.94	F.L.
18+00	120 L	116		720.94	13.30	707.64	TOP
18+34	102 L	117		720.94	18.80	702.14	PATH
18+34	126 L	118		720.94	17.70	703.24	F.L.
TP D				720.94	16.63	704.31	
B.M. D			5.57	709.88			
19+28	70 R	119		709.88	5.70	704.18	E.P.
19+28	35 R	120		709.88	4.20	705.68	C.L.
19+28	0	121		709.88	4.30	705.58	E.P.
19+28	31 L	122		709.88	6.40	703.48	F.L.
19+28	50 L	123		709.88	5.70	704.18	E.P.
19+28	60 L	124		709.88	5.70	704.18	E.P.
19+28	67 L	125		709.88	4.50	705.38	TOP
19+28							1:1 SLOPE DOWN
20+52	70 R	126		709.88	4.60	705.28	E.P.
20+52	35 R	127		709.88	4.40	705.48	C.L.
20+52	0	128		709.88	4.90	704.98	E.P.

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
20+52	36 L	129		709.88	7.70	702.18	D.I. C.L.
20+52	49 L	130		709.88	6.70	703.18	E.P.
20+52	60 L	131		709.88	6.60	703.28	E.P.
20+52	67 L	132		709.88	5.40	704.48	TOP
20+52							1.5:1 SLOPE TO 25 FT. DEPTH +10 FT. DROP
20+88	50 L	133		709.88	6.80	703.08	E.P.
20+88	60 L	134		709.88	6.70	703.18	E.P.
20+88	69 L	135		709.88	5.60	704.28	TOP
20+88							1.5:1 SLOPE
21+50	35 R	136		709.88	4.20	705.68	C.L.
22+50	35 R	137		709.88	4.50	705.38	C.L.
23+00	82 L	138		709.88	5.80	704.08	
23+00		139		709.88	6.10	703.78	E.P.
		140		709.88	5.60	704.28	
25+64	70 R	141		709.88	5.30	704.58	E.P.
25+64	35 R	142		709.88	5.00	704.88	C.L.
25+64	0	143		709.88	5.30	704.58	E.P.
25+64	82 L	144		709.88	6.60	703.28	
25+64		145		709.88	7.00	702.88	E.P.
							2:1 SLOPE DOWN
TP E				709.88	7.64	702.24	
B.M. E			5.74	707.98			
28+00	82 L	146		707.98	5.80	702.18	
28+00	35 R	147		707.98	5.30	702.68	C.L.
28+00	70 R	148		707.98	5.20	702.78	E.P.
28+00	107 R	149		707.98	5.30	702.68	E.P.
28+00	118 R	150		707.98	5.10	702.88	C.L.
28+00	129 R	151		707.98	5.30	702.68	E.P.
28+00	191 R	152		707.98	12.30	695.68	FENCE
29+00		153		707.98	13.10	694.88	FENCE
29+00	70 R	154		707.98	6.40	701.58	E.P.
29+00	35 R	155		707.98	6.30	701.68	C.L.
29+00	0	156		707.98	6.30	701.68	
		157		707.98	9.00	698.98	E.P. L.P.

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
29+27	131 L	158		707.98	8.40	699.58	L.P.
29+27	297 L	159		707.98	7.90	700.08	
		160		707.98	9.00	698.98	N.E. CORNER E.P.
		161		707.98	10.40	697.58	S.E. CORNER E.P.
							5:1 SLOPE FOR 10 FT., 8 FT. BENCH, 2.5:1 DOWN E'LY.
							4:1 SLOPE DOWN S'LY TO FENCE LINE 25 FT. AWAY, 4:1 THEREON
30+00		162		707.98	16.20	691.78	FENCE
30+00	70 R	163		707.98	7.90	700.08	E.P.
30+00	35 R	164		707.98	7.50	700.48	C.L.
30+00	0	165		707.98	7.50	700.48	E.P.
							2:1 SLOPE DOWN
31+00		166		707.98	23.10	684.88	FENCE
31+00	70 R	167		707.98	9.40	698.58	E.P.
31+00	35 R	168		707.98	9.30	698.68	C.L.
31+00	0	169		707.98	9.40	698.58	E.P.
RW END	70 R	170		707.98	11.90	696.08	E.P.
RW END	35 R	171		707.98	11.50	696.48	C.L.
RW END	0	172		707.98	11.40	696.58	E.P.
+ 50 FT	70 R	173		707.98	16.80	691.18	E.P.
+ 50 FT	35 R	174		707.98	16.20	691.78	C.L.
+ 50 FT	0	175		707.98	15.80	692.18	E.P.
+ 100 FT	70 R	176		707.98	24.70	683.28	E.P.
+ 100 FT	35 R	177		707.98	23.40	684.58	C.L.
+ 100 FT	0	178		707.98	23.60	684.38	E.P.
27+00	109 R	179		707.98	4.30	703.68	E.P.
27+00	120 R	180		707.98	4.30	703.68	C.L.
27+00	131 R	181		707.98	4.40	703.58	E.P.
27+00	178 R	182		707.98	5.00	702.98	TOP
27+00	203 R	183		707.98	10.20	697.78	TOE
26+25		184		707.98	4.00	703.98	SURVEY MARKER
26+00	70 R	185		707.98	4.00	703.98	
26+00	109 R	186		707.98	3.90	704.08	E.P.
26+00	131 R	187		707.98	4.00	703.98	E.P.
26+00	157 R	188		707.98	4.80	703.18	TOP

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
26+00	167 R	189		707.98	6.70	701.28	TOE
25+00	70 R	190		707.98	2.90	705.08	E.P.
25+00	109 R	191		707.98	3.70	704.28	E.P.
25+00	120 R	192		707.98	3.30	704.68	C.L.
25+00	131 R	193		707.98	3.50	704.48	E.P.
25+00		194		707.98	8.60	699.38	FENCE
24+00	70 R	195		707.98	2.70	705.28	E.P.
24+00	109 R	196		707.98	3.10	704.88	E.P.
24+00	120 R	197		707.98	3.10	704.88	C.L.
24+00	131 R	198		707.98	3.65	704.33	E.P.
TP F				707.98	3.65	704.33	
B.M. F			6.48	710.81			
23+00	70 R	199		710.81	5.60	705.21	
23+00		200		710.81	5.70	705.11	HOLD LINE
23+00		201		710.81	5.90	704.91	
23+00		202		710.81	7.80	703.01	E.P.
23+00		203		710.81	8.60	702.21	TOP 40 FT FROM E.P.
23+00		204		710.81	13.60	697.21	TOE 10 FT FROM TOP
23+00		205		710.81	19.20	691.61	TOP 60 FT FROM TOE
23+00		206		710.81	29.20	681.61	TOE 20 FT FROM TOP
21+00		207		710.81	5.70	705.11	TW CL
21+00		208		710.81	6.00	704.81	E.P.
21+00		209		710.81	6.30	704.51	TOP
21+00		210		710.81	15.20	695.61	TOE 25 FT FROM TOP
21+00		211		710.81	15.80	695.01	TOP
21+00		212		710.81	27.30	683.51	TOE
21+00		213		710.81	27.00	683.81	TOP
20+00		214		710.81	5.50	705.31	TW E.P.
20+00		215		710.81	7.70	703.11	TW C.L.
20+00		216		710.81	7.80	703.01	TW E.P.
19+00		217		710.81	5.50	705.31	RW E.P.
19+00		218		710.81	11.20	699.61	TW E.P.
19+00		219		710.81	11.40	699.41	TW E.P.
19+00		220		710.81	15.00	695.81	FLAT PAD

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.	
18+00		221		710.81	5.30	705.51	RW E.P.	
18+00		222		710.81	11.40	699.41	TOE	19.06%
18+00		223		710.81	11.90	698.91	TW E.P.	
18+00		224		710.81	12.00	698.81	TW C.L.	
18+00		225		710.81	12.40	698.41	TW EDGE	
18+00		226		710.81	14.90	695.91	E.P.	
17+00		227		710.81	4.50	706.31	RW E.P.	
17+00		228		710.81	11.10	699.71	TW E.P.	
17+00		229		710.81	11.60	699.21	TW E.P.	
16+00		230		710.81	3.70	707.11	RW E.P.	
16+00		231		710.81	10.60	700.21	TW E.P.	19.17%
16+00		232		710.81	10.74	700.07	TW C.L.	
16+00		233		710.81	10.90	699.91	TW E.P.	
TP G				710.81	10.74	700.07		
B.M. G			11.25	711.32				
15+00		234		711.32	4.00	707.32	RW E.P.	
15+00		235		711.32	10.20	701.12	TW E.P.	17.22%
15+00		236		711.32	10.00	701.32	TW E.P.	
14+00		237		711.32	3.70	707.62	RW E.P.	
14+00		238		711.32	9.30	702.02	TW E.P.	15.56%
14+00		239		711.32	9.20	702.12	TW E.P.	
13+00		240		711.32	3.70	707.62	RW E.P.	
13+00		241		711.32	8.90	702.42	TW C.L.	
13+00		242		711.32	8.70	702.62	TW C.L.	
12+00		243		711.32	4.00	707.32	RW E.P.	
12+00		244		711.32	8.00	703.32	TW C.L.	
12+00		245		711.32	8.00	703.32	TW C.L.	
11+00		246		711.32	4.60	706.72	RW E.P.	
10+75	70 R	247		711.32	3.90	707.42		
TP H				711.32	12.76	698.56		
B.M. H			0.50	699.06				
10+00		248		699.06	2.20	696.86	RD E.P.	
		249		699.06	1.50	697.56	RD E.P.	
		250		699.06	2.20	696.86	RD E.P.	

EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
		251		699.06	2.90	696.16	RD E.P.
		252		699.06	3.70	695.36	RD E.P.
12+00		253		699.06	1.10	697.96	RD C.L.
12+00		254		699.06	1.10	697.96	TOP 13 FT FROM CL
12+00		255		699.06	7.30	691.76	TOE 45 FT FROM TOP
							3% DOWN FOR 50 FT, THEN FLAT
13+00		256		699.06	2.20	696.86	RD C.L.
13+00		257		699.06	2.40	696.66	TOP
13+00		258		699.06	9.40	689.66	TOE 50 FT FROM TOP
14+00		259		699.06	2.80	696.26	TOE, E'LY RD E.P.
14+00		260		699.06	2.20	696.86	TOP
14+00		261		699.06	5.30	693.76	TOE
		262		699.06	5.90	693.16	MID TW, E'LY TW EP
		263		699.06	5.80	693.26	MID TW, TW C.L.
		264		699.06	5.90	693.16	MID TW, W'LY TW EP
		265		699.06	6.40	692.66	MID TW, TOP 5 FT FROM EP
		266		699.06	12.10	686.96	MID TW, TOE
		267		699.06	13.30	685.76	MID TW, 100 FT FROM CL
		268		699.06	13.90	685.16	MID TW, 200 FT FROM CL
14+05		269		699.06	10.70	688.36	TW C.L. AT 1+00
14+05		270		699.06	16.40	682.66	TW S'LY E.P.
14+05		271		699.06	16.20	682.86	TW C.L. AT 2+00
14+05		272		699.06	16.30	682.76	TW N'LY E.P.
							TOP IS AT 35 FT R
14+05		273		699.06	20.70	678.36	F.L. 47 FT R
14+05		274		699.06	16.60	682.46	TOP 80 FT RIGHT
14+05		275		699.06	20.90	678.16	TW C.L. AT 3+00
14+05		276		699.06	23.54	675.52	TW C.L. AT 3+50
14+05		277		699.06	26.00	673.06	TW C.L. AT 4+00
TP J				699.06	23.54	675.52	
B.M. J			0.03	675.55			
14+05		278		675.55	7.10	668.45	TW C.L. AT 5+00
14+05		279		675.55	10.50	665.05	TW C.L. AT 6+00
14+05		280		675.55	12.10	663.45	TW C.L. AT 7+00

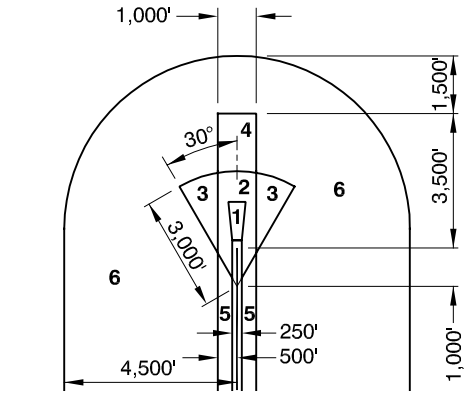
EXISTING AIRFIELD TOPOGRAPHY

Baseline is 5 ft east of E'ly Runway edge stripe - E'ly E.P.

STATION	OFFSET	PT. #	+S	H.I.	-S	ELEV.	DESC.
14+05		281		675.55	12.10	663.45	TW C.L. AT 8+00
		282		675.55	13.80	661.75	PAD BY NEW HANGARS
		283		675.55	10.20	665.35	PAD BY NEW HANGARS
TP K				675.55	0.58	674.97	
B.M. K			15.79	690.76			
		284		690.76	14.80	675.96	PARKING APRON
		285		690.76	6.90	683.86	PARKING APRON

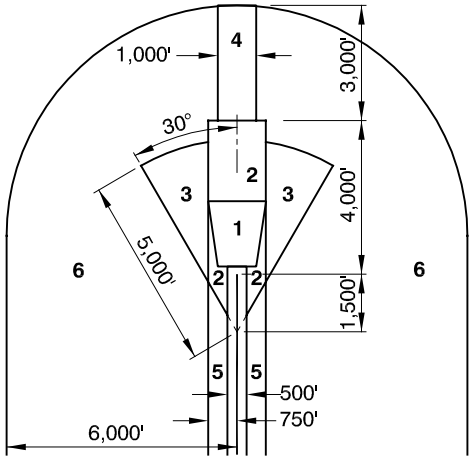
Appendix E

Caltrans Airport Compatibility Planning Guidelines



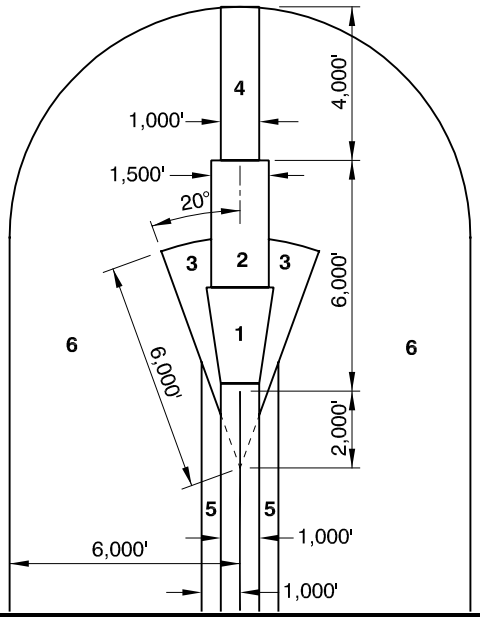
Example 1:
Short General Aviation Runway

Assumptions:
- Length less than 4,000 feet
- Approach visibility minimums ≥ 1 mile or visual approach only
- Zone 1 = 250' x 450' x 1,000'



Example 2:
Medium General Aviation Runway

Assumptions:
- Length 4,000 to 5,999 feet
- Approach visibility minimums ≥ 3/4 mile and < 1 mile
- Zone 1 = 1,000' x 1,510' x 1,700'



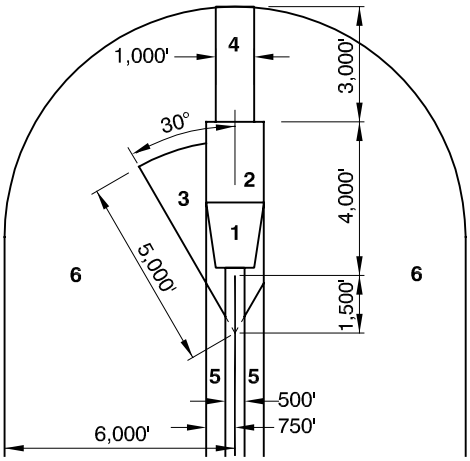
Example 3:
Long General Aviation Runway

Assumptions:
- Length 6,000 feet or more
- Approach visibility minimums < 3/4 mile
- Zone 1 = 1,000' x 1,750' x 2,500'

FIGURE 9K

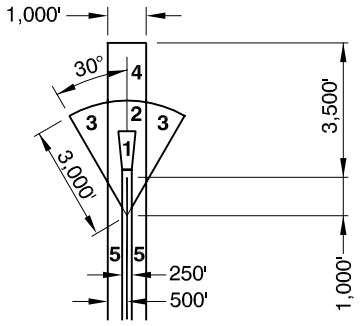
Safety Compatibility Zone Examples

General Aviation Runways



Example 4:
General Aviation Runway with Single-Sided Traffic Pattern

Assumptions:
- No traffic pattern on right
- Length 4,000 to 5,999 feet
- Approach visibility minimums ≥ 3/4 mile and < 1 mile
- Zone 1 = 1,000' x 1,510' x 1,700'



Example 5:
Low-Activity General Aviation Runway

Assumptions:
- Less than 2,000 takeoffs and landings per year at individual runway end.
- Length less than 4,000 feet
- Approach visibility minimums ≥ 1 mile or visual approach only
- Zone 1 = 250' x 450' x 1,000'

Legend

1. Runway Protection Zone
2. Inner Approach/Departure Zone
3. Inner Turning Zone
4. Outer Approach/Departure Zone
5. Sideline Zone
6. Traffic Pattern Zone

Notes:

- RPZ (Zone 1) size in each example is as indicated by FAA criteria for the approach type assumed. Adjustment may be necessary if the approach type differs.
- See Table 9A for factors to consider regarding other possible adjustments to these zones to reflect characteristics of a specific airport runway.
- See Tables 9B and 9C for guidance on compatibility criteria applicable with each zone.

These examples are intended to provide general guidance for establishment of airport safety compatibility zones. They do not represent California Department of Transportation standards or policy.

FIGURE 9K *CONTINUED*

The generic sets of compatibility zones shown in Figures 9K and 9L may need to be adjusted to take into account various operational characteristics of a particular airport runway. Among these characteristics are the following:

- **Instrument Approach Procedures**—At least within the final two to three miles which are of greatest interest to land use compatibility planning, the flight paths associated with precision instrument approach procedures are highly standardized from airport to airport. Other types of instrument approach procedures are less uniform, however. If such procedures are available at an airport, ALUCs should identify the flight paths associated with them and the extent to which they are used. Procedures which are regularly used should be taken into account in the configuration of safety zones (and in setting height limits for airspace protection). Types of procedures which may warrant special consideration include:
  - *Circling Approaches:* Most instrument approach procedures allow aircraft to circle to land at a different runway rather than continue straight-in to a landing on the runway for which the approach is primarily designed. When airports which have straight-in approaches to multiple runway ends, circling approaches are seldom necessary. However, when only one straight-in approach procedure is available and the wind direction precludes landings on that runway, aircraft may be forced to circle to land on at another runway end. Pilots must maintain sight of the runway while circling, thus turns are typically tight. Also, the minimum circling altitude is often less than the traffic pattern altitude. At airports where circling approaches are common, giving consideration to the associated risks when setting safety zone boundaries is appropriate.
  - *Nonprecision Approaches at Low Altitudes:* Nonprecision instrument approach procedures often involve aircraft descending to a lower altitude farther from the runway than occurs on either precision instrument or visual approaches. An altitude of 300 to 400 feet as much as two to three miles from the runway is not unusual. The safety (and noise) implications of such procedures need to be addressed at airports where they are in common use. (A need for corresponding restrictions on the heights of objects also exists along these routes.)
  - *Nonprecision Approaches not Aligned with the Runway:* Some types of nonprecision approaches bring aircraft toward the runway along a path that is not aligned with the runway. In many cases, these procedures merely enable the aircraft to reach the airport vicinity at which point they then proceed to land under visual conditions. In other instances, however, transition to the runway alignment occurs close to the runway and at a low altitude.
- **Other Special Flight Procedures or Limitations**—Single-sided traffic patterns represent only one type of special flight procedures or limitations which may be established at some airports. Factors such as nearby airports, high terrain, or noise-sensitive land uses may affect the size of the airport traffic pattern or otherwise dictate where and at what altitude aircraft fly when using the airport. These procedures may need to be taken into account in the design of safety compatibility zones.
- **Runway Use by Special-Purpose Aircraft**—In addition to special flight procedures which most or all aircraft may use at some airports, certain special-purpose types of aircraft often have their own particular flight procedures. Most common among these aircraft are fire attack, agricultural, and military airplanes. Helicopters also typically have their own special flight routes. The existence of these procedures needs to be investigated and, where warranted by the levels of usage, may need to be considered in the shaping of safety zones.
- **Small Aircraft Using Long Runways**—When small airplanes take off from long runways (especially runways in excess of 8,000 feet length), it is common practice for them to turn toward their intended direction of flight before passing over the far end of the runway. When mishaps occur, the resulting pattern of accident sites will likely be more dispersed around the runway end than is the case with shorter runways. With short runways, accident sites tend to be more tightly clustered around the runway end and along the extended runway centerline because aircraft are still following the runway heading as they begin their climb.
- **Runways Used Predominantly in One Direction**—Most runways are used sometimes in one direction and, at other times, in the opposite direction depending upon the direction of the wind. Even when used predominantly in one direction, a busy runway may experience a significant number of operations in the opposite direction (for example, a runway with 100,000 total annual operations, 90% of which are in one direction, will still have 10,000 annual operations in the opposite direction). Thus, in most situations, the generic safety zones—which take into account both takeoffs and landings at a runway end—are applicable. However, when the number of either takeoffs or landings at a runway end is less than approximately 2,000 per year, then adjustment of the safety compatibility zones to reflect those circumstances may be warranted.
- **Displaced Landing Thresholds**—A displaced threshold moves the landing location of aircraft down the runway from where they would land in the absence of the displacement. The distribution pattern of landing accident sites as shown in Appendix F would thus shift a corresponding amount. The pattern of accident locations for aircraft taking off toward that end of the runway does not necessarily shift, however. Whether the runway length behind the displaced threshold is usable for takeoffs toward that end of the runway is a key factor in this regard. The appropriateness of making adjustments to safety zone locations in response to the existence of a displaced threshold needs to be examined on a case-by-case basis. The numbers of landings at and takeoffs toward the runway end in question should be considered in making this determination.

TABLE 9A

Safety Zone Adjustment Factors

Airport Operational Variables

Zone 1: Runway Protection Zone

Risk Factors / Runway Proximity

- Very high risk
- Runway protection zone as defined by FAA criteria
- For military airports, clear zones as defined by AICUZ criteria

Basic Compatibility Qualities

- Airport ownership of property encouraged
- Prohibit all new structures
- Prohibit residential land uses
- Avoid nonresidential uses except if very low intensity in character and confined to the sides and outer end of the area

Zone 2: Inner Approach/Departure Zone

Risk Factors / Runway Proximity

- Substantial risk: RPZs together with inner safety zones encompass 30% to 50% of near-airport aircraft accident sites (air carrier and general aviation)
- Zone extends beyond and, if RPZ is narrow, along sides of RPZ
- Encompasses areas overflown at low altitudes — typically only 200 to 400 feet above runway elevation

Basic Compatibility Qualities

- Prohibit residential uses except on large, agricultural parcels
- Limit nonresidential uses to activities which attract few people (uses such as shopping centers, most eating establishments, theaters, meeting halls, multi-story office buildings, and labor-intensive manufacturing plants unacceptable)
- Prohibit children's schools, day care centers, hospitals, nursing homes
- Prohibit hazardous uses (e.g. aboveground bulk fuel storage)

Zone 3: Inner Turning Zone

Risk Factors / Runway Proximity

- Zone primarily applicable to general aviation airports
- Encompasses locations where aircraft are typically turning from the base to final approach legs of the standard traffic pattern and are descending from traffic pattern altitude
- Zone also includes the area where departing aircraft normally complete the transition from takeoff power and flap settings to a climb mode and have begun to turn to their en route heading

Basic Compatibility Qualities

- Limit residential uses to very low densities (if not deemed unacceptable because of noise)
- Avoid nonresidential uses having moderate or higher usage intensities (e.g., major shopping centers, fast food restaurants, theaters, meeting halls, buildings with more than three aboveground habitable floors are generally unacceptable)
- Prohibit children's schools, large day care centers, hospitals, nursing homes
- Avoid hazardous uses (e.g. aboveground bulk fuel storage)

TABLE 9B

Basic Safety Compatibility Qualities

Zone 4: Outer Approach/Departure Zone

Risk Factors / Runway Proximity

- Situated along extended runway centerline beyond Zone 3
- Approaching aircraft usually at less than traffic pattern altitude
- Particularly applicable for busy general aviation runways (because of elongated traffic pattern), runways with straight-in instrument approach procedures, and other runways where straight-in or straight-out flight paths are common
- Zone can be reduced in size or eliminated for runways with very-low activity levels

Basic Compatibility Qualities

- In undeveloped areas, limit residential uses to very low densities (if not deemed unacceptable because of noise); if alternative uses are impractical, allow higher densities as infill in urban areas
- Limit nonresidential uses as in Zone 3
- Prohibit children's schools, large day care centers, hospitals, nursing homes

Zone 5: Sideline Zone

Risk Factors / Runway Proximity

- Encompasses close-in area lateral to runways
- Area not normally overflown; primary risk is with aircraft (especially twins) losing directional control on takeoff
- Area is on airport property at most airports

Basic Compatibility Qualities

- Avoid residential uses unless airport related (noise usually also a factor)
- Allow all common aviation-related activities provided that height-limit criteria are met
- Limit other nonresidential uses similarly to Zone 3, but with slightly higher usage intensities
- Prohibit children's schools, large day care centers, hospitals, nursing homes

Zone 6: Traffic Pattern Zone

Risk Factors / Runway Proximity

- Generally low likelihood of accident occurrence at most airports; risk concern primarily is with uses for which potential consequences are severe
- Zone includes all other portions of regular traffic patterns and pattern entry routes

Basic Compatibility Qualities

- Allow residential uses
- Allow most nonresidential uses; prohibit outdoor stadiums and similar uses with very high intensities
- Avoid children's schools, large day care centers, hospitals, nursing homes

Definitions

As used in this table, the follow meanings are intended:

- *Allow:* Use is acceptable
- *Limit:* Use is acceptable only if density/intensity restrictions are met
- *Avoid:* Use generally should not be permitted unless no feasible alternative is available
- *Prohibit:* Use should not be permitted under any circumstances
- *Children's Schools:* Through grade 12
- *Large Day Care Centers:* Commercial facilities as defined in accordance with state law; for the purposes here, family day care homes and noncommercial facilities ancillary to a place of business are generally allowed.
- *Aboveground Bulk Storage of Fuel:* Tank size greater than 6,000 gallons (this suggested criterion is based on Uniform Fire Code criteria which are more stringent for larger tank sizes)

TABLE 9B *CONTINUED*